

VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a **Minor Industrial** permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260. The discharge results from the operation of a state-owned trout production facility. This permit action consists of reissuing the permit for a five-year term with limitations on Total Suspended Solids, Settleable Solids, and DO with Flow, pH and Temperature monitoring.

1. Facility Name and Address: **Paint Bank Fish Cultural Station**
14505 Paint Bank Road
Paint Bank, VA 24131
SIC Code: 0273, 0921

Location: Route 311, 1.7 miles south of Paint Bank, Craig County, VA
Latitude: 37° 33' 9.63" N Longitude: 80° 14' 36.02" W
2. Permit No. **VA0091324** Expiration Date: March 23, 2013
3. Owner Contact: Name: Mr. Brian Beers Title: Hatchery Superintendent
Telephone No: (540) 897-5401
4. Application Complete Date: November 29, 2012
Permit Drafted By: Lynn V. Wise Date: January 31, 2013
DEQ Regional Office: Blue Ridge Regional Office - Roanoke
Reviewed By: Kirk A. Batsel Date: 2/7/13
Public Comment Period Dates: From: 2/13/13 To: 3/15/13
5. Receiving Stream Name: Paint Bank Branch River Mile: 1.52

Basin: James River (Upper) Subbasin: N/A Section: 12 Class: VI
Special Standards: None

7-Day, 10-Year Low Flow: 0.48 MGD 1-Day, 10-Year Low Flow: 0.45 MGD
30-Day, 5-Year Low Flow: 0.59 MGD Harmonic Mean Flow: 1.6 MGD
30-Day, 10-Year Low Flow: 0.54 MGD

Tidal? YES/NO On 303(d) list? YES/NO
6. Operator License Requirements: None
7. Reliability Class: N/A

**State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name: Paint Bank Fish Cultural Station
 NPDES Permit Number: VA0091324
 Permit Writer Name: Lynn V. Wise
 Date: March 14, 2013

Major ☐Minor ☒Industrial ☒Municipal ☐

I.A. Draft Permit Package Submittal Includes:

	Yes	No	N/A
1. Permit Application?		X	
2. Complete Draft Permit (for renewal or first time permit- entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?		X	
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?		X	
8. Whole Effluent Toxicity Test summary and analysis?			X
9. Permit Rating Sheet for new or modified industrial facilities? <i>No change</i>	X		X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		

I.B. Permit/Facility Characteristics— cont.	Yes	No	N/A
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?		X	
a. Has a TMDL been developed and approved by EPA for the impaired water?			X
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?			X
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?	X		
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs (To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?			
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?			

II.B. Effluent Limits– General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?			
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?			

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?			
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?			
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?			
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?			
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?			
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?			
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?			

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
3. Does the fact sheet provide effluent characteristics for each outfall?			
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?			
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?			
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?			
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?			
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?			
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?			
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?			
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?			
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?			
8. Does the record indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?			

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?			
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?			
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?			
4. Does the permit require testing for Whole Effluent Toxicity?			

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?			
2. Does the permit include appropriate storm water program requirements?			

II.F. Special Conditions – cont.

	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?			
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?			
a. Does the permit require implementation of the "Nine Minimum Controls"?			
b. Does the permit require development and implementation of a "Long Term Control Plan"?			
c. Does the permit require monitoring and reporting for CSO events?			
7. Does the permit include appropriate Pretreatment Program requirements?			

II.G. Standard Conditions

II.G. Standard Conditions	Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?			
List of Standard Conditions – 40 CFR 122.41			
Duty to comply	Property rights	Reporting Requirements	
Duty to reapply	Duty to provide information	Planned change	
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance	
not a defense	Monitoring and records	Transfers	
Duty to mitigate	Signatory requirement	Monitoring reports	
Proper O & M	Bypass	Compliance schedules	
Permit actions	Upset	24-Hour reporting	
		Other non-compliance	
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?			

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Review Checklist – For Non-Municipals (To be completed and included in the record for all non-POTWs)

II.A. Permit Cover Page/Administration

	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits– General Elements

	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?			X

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)

	Yes	No	N/A
1. Is the facility subject to a national effluent limitations guideline (ELG)?	X		
a. If yes, does the record adequately document the categorization process, including an evaluation of whether the facility is a new source or an existing source?	X		
b. If no, does the record indicate that a technologybased analysis based on Best Professional Judgement (BPJ) was used for all pollutants of concern discharged at treatable concentrations?			X
2. For all limits developed based on BPJ, does the record indicate that the limits are consistent with the criteria established at 40 CFR 125.3(d)?			X
3. Does the fact sheet adequately document the calculations used to develop both ELG and /or BPJ technology-based effluent limits?	X		
4. For all limits that are based on production or flow, does the record indicate that the calculations are based on a “reasonable measure of ACTUAL production” for the facility (not design)?			X
5. Does the permit contain “tiered” limits that reflect projected increases in production or flow?		X	
a. If yes, does the permit require the facility to notify the permitting authority when alternate levels of production or flow are attained?			X
6. Are technology-based permit limits expressed in appropriate units of measure (e.g., concentration, mass, SU)?	X		

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)– cont.	Yes	No	N/A
7. Are all technology-based limits expressed in terms of both maximum daily, weekly average, and/or monthly average limits?	X		
8. Are any final limits less stringent than required by applicable effluent limitations guidelines or BPJ?		X	

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the record indicate that any WQBELs were derived from a completed and EPA approved TMDL?		X	
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations where data are available)?	X		
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	X		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term (e.g., average monthly) AND short term (e.g., maximum daily, weekly average, instantaneous) effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the fact sheet indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			X
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require testing for Whole Effluent Toxicity in accordance with the State's standard practices?			X

II.F. Special Conditions	Yes	No	N/A
1. Does the permit require development and implementation of a Best Management Practices (BMP) plan or site-specific BMPs?	X		
a. If yes, does the permit adequately incorporate and require compliance with the BMPs?	X		
2. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
3. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		

II.G. Standard Conditions	Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		
List of Standard Conditions – 40 CFR 122.41			
Duty to comply	Property rights	Reporting Requirements	
Duty to reapply	Duty to provide information	Planned change	
Need to halt or reduce activity not a defense	Inspections and entry	Anticipated noncompliance	
Duty to mitigate	Monitoring and records	Transfers	
Proper O & M	Signatory requirement	Monitoring reports	
Permit actions	Bypass	Compliance schedules	
	Upset	24-Hour reporting	
		Other non-compliance	
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for existing non-municipal dischargers regarding pollutant notification levels [40 CFR 122.42(a)]?	X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>LYNN V. WISE</u>
Title	<u>ENVIRONMENTAL ENGINEER, Sr.</u>
Signature	<u>Lynn V. Wise</u>
Date	<u>3/14/13</u>

8. Permit Characterization:
☐ Private ☐ Federal ☒ State ☐ POTW
☐ Possible Interstate Effect ☐ Interim Limits in Other Document (attach to Fact Sheet)
9. Facility Information: Attach a Schematic of Wastewater Treatment System(s), and provide a general description of the production cycle(s) and activities of the facility.

Discharge Description

OUTFALL NUMBER	DISCHARGE SOURCE	TREATMENT	FLOW
001	Trout hatching/rearing and feeding operations; cleaning operations	Solids settling and removal	3MGD Flow-through

The Paint Bank Fish Cultural Station is a trout production facility operated by the Virginia Department of Game & Inland Fisheries with an annual capacity of approximately 140,000 pounds of fish. Brook, brown, and rainbow trout are hatched and reared to 'catchable' size for stocking in state waters.

The water for operation of the hatchery is gravity fed from three local underground springs. Two groundwater wells are also available if necessary to supplement water flow to the facility. The well water is also used to fill the tanker trucks used for transporting the trout. There are a total of 52 raceways at the facility. Currently, there are sixteen indoor raceways that are used for the small, young fish and 36 outdoor raceways (28 large and eight narrow) that are used for the larger, older fish. Several of the previously used outdoor raceways were taken off-line and converted into a settling pond. About half of the water flowing to the facility goes directly to the outdoor raceways; the other half enters the hatchery building and flows through the indoor raceways before combining with the flow to the outdoor raceways. Based upon DMR data from the past 12 months, there is an average continuous flow through the facility of 2.37 MGD. The maximum daily flow was 3 MGD including cleaning operations. The wastewater discharges to Paint Bank Branch.

Each of the indoor raceways is cleaned daily during the nine (9) months per year it is in use with a soft bristle brush attached to a broom handle. The outdoor raceways are cleaned as needed, but typically once per month. Solids are vacuumed from the raceways and tailboxes and pumped to the plastic lined settling pond. Approximately once per year, about 4,000 – 6,000 gallons of settled solids are removed from the settling pond by a septic hauler and transported to the Western Virginia Water Authority Water Pollution Control Plant in Roanoke, VA, for further treatment.

A schematic of the facility is provided in **Attachment A**. The current permit for the facility authorizes discharges from nine (9) outfalls. These outfalls were consolidated into one discharge point in the summer of 2010; therefore, the proposed permit only authorizes a discharge from Outfall 001. It is noted that the facility had been determined to be subject to the Concentrated Aquatic Animal Production Effluent Guideline (40 CFR Part 451) due to the direct discharge from a flow-through system that produces greater than 100,000 pound of fish per year. There are no numeric limitations included in the guideline; however, other requirements are included in the Special Conditions section of the permit.

10. Sewage Sludge Use or Disposal: Provide a description of sewage sludge land application plan elements addressed in permit, if applicable.

Not Applicable

11. Discharge(s) Location Description: Potts Creek Quadrangle (#137C)

A copy of the USGS Topo map which indicates the discharge location, significant dischargers to the receiving stream, water intakes, and other items of interest may be found in **Attachment A**.

12. Material Storage:

All cleaning materials, indoor and outdoor fish food, and pharmaceuticals are stored indoors.

13. Ambient Water Quality Information (includes surface and ground water data):

The facility discharges to Paint Bank Branch, 1.5 miles upstream of its confluence with Potts Creek which flows into the Jackson River. The stream segment is classified as a Natural Trout Water (Class VI) in the *Water Quality Standards* regulation (9-VAC-25-260-00 et seq.). In-stream criteria for natural trout waters include a minimum temperature of 20 °C, a minimum dissolved oxygen of 6.0 mg/l, and a daily average dissolved oxygen concentration of 7.0 mg/l. Critical stream flows at the discharge point were determined by drainage area proportions as compared to the continuous record gage on Potts Creek near Covington, VA (#02014000). The critical flows are listed on the front page of this Fact Sheet and a copy of the Flow Frequency Determination memo can be found in **Attachment B**.

The nearest ambient water quality monitoring station (2-POT030.66) is on Potts Creek approximately 5.5 miles downstream of the discharge. No data are available above the discharge. While Paint Bank Branch is not on the impaired waters list, there are downstream impairments for bacteria, temperature, and pH. The 2010 303(d) list includes a 9.51 mile section of Potts Creek from the confluence of Paint Bank Branch downstream to the mouth of Hamilton Branch as impaired for bacteria (*E. coli*) and pH excursions. A 5.54 mile stretch from the Paint Bank Branch confluence to the Alleghany/Craig county line is also listed as impaired for excursions of the temperature criteria. A tabulation of the available ambient water quality monitoring data and a copy of the 2010 Impaired Waters Fact Sheet for DCR watershed I10 can be found in **Attachment B**.

A review of PReP complaint logs shows that no pollution complaints or incidents were reported that could be attributed to the discharge from the Paint Bank Fish Cultural Station.

14. Antidegradation Review & Comments:

Tier: I _____ II XX _____ III _____

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters

14. Antidegradation Review & Comments (continued):

is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with a Tier determination. Paint Bank Branch is determined to be a Tier II waterbody, and no significant degradation of existing quality is allowed. This determination was made because data is not available that indicates that one or more of the standards are not being attained. In addition, trout streams are assumed to be Tier II unless information is available to indicate otherwise.

For purposes of aquatic life protection, "significant degradation" means that no more than 25% the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10% of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated. The significant degradation baseline (antidegradation baseline) for aquatic life protection is calculated for each pollutant as follows:

$$0.25 (\text{WQS} - \text{existing quality}) + \text{existing quality} = \text{Antidegradation baseline}$$

The antidegradation baseline for human health protection is calculated for each pollutant as follows:

$$0.10 (\text{WQS} - \text{existing quality}) + \text{existing quality} = \text{Antidegradation baseline}$$

The "antidegradation baselines" become the new water quality criteria in Tier II waters and effluent limits for future expansions or new facilities must be written to maintain the antidegradation baselines for each pollutant. Because sufficient effluent and stream data are not available, the antidegradation baselines have not yet been calculated.

The discharges from this facility are existing and the application does not indicate any proposed increase in the discharge of pollutants. As the facility is not proposing any increase in the loading of any pollutants over historical levels, permit limits are in compliance with antidegradation requirements set forth in the Water Quality Standard Regulation, 9 VAC 25-260-30. The antidegradation review and associated effluent limits analyses were conducted as described in Guidance Memorandum 00-2011, dated August 24, 2000, and comply with the antidegradation policy contained in Virginia's Water Quality Standards.

15. Site Visit: Date: December 6, 2012 Performed by: Lynn V. Wise
Please see **Attachment A** for the site visit memo.

16. Effluent Screening & Limitation Development:

Wastewater discharges are the flow-through discharge of water in which the fish are held, and the cleaning waste discharges from the indoor and outdoor raceways. Wastewater pollutants consist primarily of metabolic by-products (e.g. fish manure) and excess food. DMR data from the past permit term can be found in **Attachment C**.

16. Effluent Screening & Limitations Development (continued):

The pollutants of concern for a facility of this type include: total suspended solids, settleable solids, ammonia, BOD, temperature, pH and nutrients. No other toxic compounds are expected to be present, nor is toxic pollutant data available. The Federal Effluent Guideline for Concentrated Aquatic Animal Production (40 CFR Part 451) does not include numeric limitations; rather Best Management Practices are included in the Special Conditions. See **Attachment C** for applicable sections from 40 CFR Part 451.

Total Suspended Solids/Settleable Solids – Solids handling at this facility has improved with the addition of the solids holding pond and enhanced cleaning procedures. In addition to effluent limitations for solids, the permit includes a special condition prohibiting the discharge of organic solids in amounts that cause stream bed accumulations. Best Engineering Judgment (BEJ) technology-based effluent limitations for Total Suspended Solids are 10 mg/l monthly average and 15 mg/l maximum and for Settleable Solids are 0.1 ml/l monthly average and 0.5 ml/l maximum. These limitations are carried forward from the previous permit and are based on the limitations included in the general VPDES permit for aquatic animal production facilities (9 VAC 25-195-10, repealed).

Ammonia – Semiannual ammonia monitoring was required at Outfall 001 by the permit that was reissued in 2008. The acute and chronic wasteload allocations were calculated based on pH and temperature data of the effluent and the receiving stream. (See printout of the mixing calculations (Mix.exe) and wasteload allocation spreadsheet (MSTRANTI) in **Attachment C**.) The ammonia data were entered into the agency's software program (Stats.exe) to determine whether there is the potential to violate the Water Quality Standards adopted by the Board. It was determined that an effluent limitation was not necessary to protect water quality. Based upon this determination, no further ammonia monitoring will be required. The output of the program may be found in **Attachment C**.

Biological Oxygen Demand (BOD)/Dissolved Oxygen (DO) – A review of available BOD data indicated that the concentration was not significant in the discharge. During the last permit process, the agency desktop model was run to determine whether the discharge would adversely affect dissolved oxygen concentrations in the receiving stream. It was determined that a BOD limitation is unnecessary. However, a minimum DO of 5.6 mg/l and an average DO of 6.8 mg/l are needed to ensure compliance with the in-stream DO criteria. A copy of the model output is included in **Attachment C**.

Temperature/pH – These two parameters are typically included in all VPDES permits to protect water quality. However, it is not believed that the limitations are necessary in this case. The spring water entering the facility is of high quality and there is no heat source or chemical addition at the facility that would significantly alter the temperature or pH of the discharge. Historical pH and temperature indicates that there is no reasonable potential for the discharge to cause a violation of the Water Quality Standards; therefore, limitations are not included in this permit action. In addition, the monitoring frequency is being reduced to once per quarter.

Nutrients – The State Water Control Board adopted 9 VAC 25-820-10, the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia, on September 6, 2006. The general permit

16. Effluent Screening & Limitation Development (continued):

governs facilities holding individual permits that discharge total nitrogen or total phosphorous to the Chesapeake Bay or its tributaries. This facility discharges to a tributary of the Chesapeake Bay, but is not covered under this program because it is not considered equivalent to a significant discharger. To be equivalent to a significant discharger, an industrial facility above the fall line would have to discharge at least 28,500 pounds of total nitrogen per year or 3,800 pounds of total phosphorous per year. Because nitrogen and phosphorus are not discharged in these quantities and the receiving stream is not classified as "nutrient enriched", limitations are not included in the permit.

A summary of the proposed limits is presented below:

() Interim Limitations

Effective Dates: From: Eff. Date

(X) Final Limitations

Outfall 001

To: Exp Date

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENT	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (mgd)	NA	NL	NA	NA	NL	1/ Month	Estimate
pH (s.u.)	NA	NA	NA	NL	NL	1/ Quarter	Grab
Total Suspended Solids	2	10 mg/l	NA	NA	15 mg/l	1/ Month	5G/8HC
Dissolved Oxygen (mg/l)	3	6.8 mg/l	NA	5.6 mg/l	NL	1/Month	Grab
Settleable Solids	2	0.1 ml/l	NA	NA	0.5 ml/l	1/Month	5G/8HC
Temperature (°C)	NA	NL	NA	NA	NL	1/ Quarter	Grab

NA = Not Applicable NL = No Limitations

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Engineering Judgment
3. Water Quality Standards
4. Other (model, WQM Plan, etc.)
5. Best Professional Judgment

17. Antibacksliding Statement:

All limits are at least as stringent as in the previous permit.

18. Compliance Schedules:

The proposed permit does not contain a compliance schedule.

19. Special Conditions:

a. **Notification Levels**

Rationale: Required by VPDES Permit Regulation, 9VAC25-31-200 A for all manufacturing, commercial, mining, and silvicultural dischargers.

b. **Drugs**

Rationale: Required by 40 CFR 451.3(a) for Concentrated Aquatic Animal Production facilities. The special condition outlines reporting requirements for investigational new animal drug (INAD) and extralabel drug use where such a use may lead to a discharge of the drug to waters of the U.S.

c. **Aquatic Animal Containment System**

Rationale: Required by 40 CFR 451.3(b). The special condition requires notification when there is a reportable failure of the aquatic animal containment system resulting in an unanticipated material discharge of pollutants to waters of the U.S.

d. **Spill Notification**

Rationale: Required by 40 CFR 451.3(c), which requires notification to the permitting authority in the event of a spill of drugs, pesticides, or feed that results in a discharge to the waters of the U.S.

e. **Best Management Practices (BMP) Plan**

Rationale: 40 CFR 451.3(d) requires that a plan be developed and maintained that describes how the permittee will achieve the requirements of 451.11(a) through (e).

f. **Chemical Additives:**

Rationale: The special condition is adapted from the standard language contained in the general VPDES permit for aquatic animal production facilities (9 VAC 25-195-10). The special condition prohibits the addition of chemical additives to the water or wastewater without prior approval of the Department.

g. **Discharge of Solids:** The permit contains a special condition that prohibits the discharge of organic solids that would cause the degradation of state waters.

Rationale: This special condition is adopted from the standard language contained in the general VPDES permit for aquatic animal production facilities (9 VAC 25-195-10, repealed).

h. **Compliance Reporting**

Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values. The permit includes language that specifies reporting requirements for TSS and SS.

i. **Total Maximum Daily Load (TMDL) Reopener**

Rationale: Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that,

19. Special Conditions:

according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

j. Part II, Conditions Applicable to All Permits

Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

20. NPDES Permit Rating Work Sheet: Total Score 40
Please see **Attachment A** for completed work sheet.

20. Changes to Permit:

Outfall No.	Parameter Changed	Monitoring Requirement Changed		Effluent Limits Changed		Reason	Date
		From	To	From	To		
001	Temperature, pH	1/M	1/3M			history of consistent compliance and low variability	1/31/13
	Ammonia	1/6M	None			evaluation of data showed not limit needed; continued monitoring not required or necessary	1/31/13
002-009	ALL REMOVED	Various	None	Various	None	All discharges were consolidated into Outfall 001	1/31/13
Changes to Special Conditions:							
1. Removed Water Quality Criteria Reopener – only used when monitoring for a water quality parameter is required with no limit on the effluents limitations page.							1/31/13
2. All conditions were reviewed to ensure language is up to date with the current permit manual and the Federal Effluent Guidelines for Concentrated Aquatic Animal Production facilities (40 CFR Part 451).							1/31/13

21. Variances/Alternate Limits or Conditions: Provide justification or refutation rationale for modifications or alternatives to required permit conditions/limitations.

Not Applicable. Note that because the facility received a warning letter (W2012-11-W-1005, failure to report ammonia data) within the past three years, reduced effluent monitoring frequency for limited parameters was not considered.

22. Public Notice Information required by 9 VAC 25-31-280 B:

All pertinent information is on file and may be inspected or copied by contacting Lynn V. Wise at:

Virginia DEQ Blue Ridge Regional Office
3019 Peters Creek Road
Roanoke, VA 24019
(540) 562-6787
lynn.wise@deq.virginia.gov

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may review the draft permit and application at the DEQ Blue Ridge Regional Office by appointment.

23. Additional Comments:
Previous Board Action: None

Staff Comments: The discharge is not addressed in any planning document, but will be included if required when the plan is updated. The discharge is not controversial and is currently meeting the required effluent limitations.

Public Comment: No comments were received during the public notice period.

Other Agency Comments:**DGIF/DCR**

A screening for Threatened and Endangered (T&E) Species in the vicinity of the Paint Bank Fish Cultural Station was performed and a T&E Species Coordination Form package was submitted to the Department of Game and Inland Fisheries (DGIF), the Department of Conservation and Recreation (DCR), and the United States Fish & Wildlife Service (USFWS). The purpose of the screening is to assure that mixing zones do not impact listed species. The Federally endangered, State endangered (FESE) James spineymussel is known to be found in this area and Potts Creek has been designated by DGIF as a "Threatened and Endangered Species Water".

Both DCR and DGIF recommend alternate methods other than chlorination for disinfection to minimize impacts to aquatic resources. Disinfection of the effluent is not required or performed at this facility and there are no other routine chemical additions to the wastewater.

DGIF also recommended the use of EPA draft ammonia criteria for waters where mussels are present to develop ammonia effluent limitations for this discharge. DEQ acknowledges the research to support lower ammonia water quality criteria to protect mussels and that the draft criteria are still under consideration. In the meantime, DEQ uses the Virginia Water Quality Standards adopted by the State Water Control Board and approved by EPA to evaluate the need for effluent limitations. These standards are updated on a regular basis (triennial review) to incorporate new information applicable to Virginia. The reasonable potential analysis discussed in section 16 above was conducted based on these current water quality criteria, the results of which concluded that ammonia effluent limitations are not necessary to protect the water quality of the receiving stream. It is also noted that monitoring data downstream of the discharge in Potts Creek (Station ID 2-POT030.66) show nondetectable ammonia concentrations (< 0.04 mg/l). The in-stream concentration is well below the draft criteria being considered by EPA.

DEQ believes that the discharge from this facility meets the requirements of the Water Quality Standards and the *VPDES Permit Regulation* and does not violate either the federal *Endangered Species Act* or the *Virginia Endangered Species Act*. The effluent limitations provided in the permit will adequately protect the aquatic life and maintain the Water Quality Standards of 9 VAC 25-260-00 et seq. No adverse impacts to this species are expected. Further documentation of the T&E species review can be found in the Agency's files at the Regional Office.

VDH

The Virginia Department of Health has waived the right to comment and/or object to the draft permit.

24. 303(d) Listed Segments (TMDL):

This facility discharges directly to Paint Bank Branch which is not included on the Impaired Waters list. However, the 2010 303(d) list includes a 9.51 mile section of Potts Creek from the confluence of Paint Bank Branch downstream to the mouth of Hamilton Branch as impaired for bacteria (*E. coli*) and pH excursions. A 5.54 mile stretch from the Paint Bank Branch confluence to the Alleghany/Craig county line is also listed as impaired for excursions of the temperature criteria. A TMDL has not been developed. Since this discharge does not contain *E. coli*, it is not anticipated that the TMDL will include an allocation for this facility. Similarly, the facility does not contribute to in-stream pH or temperature excursions. However, temperature and pH monitoring is included.

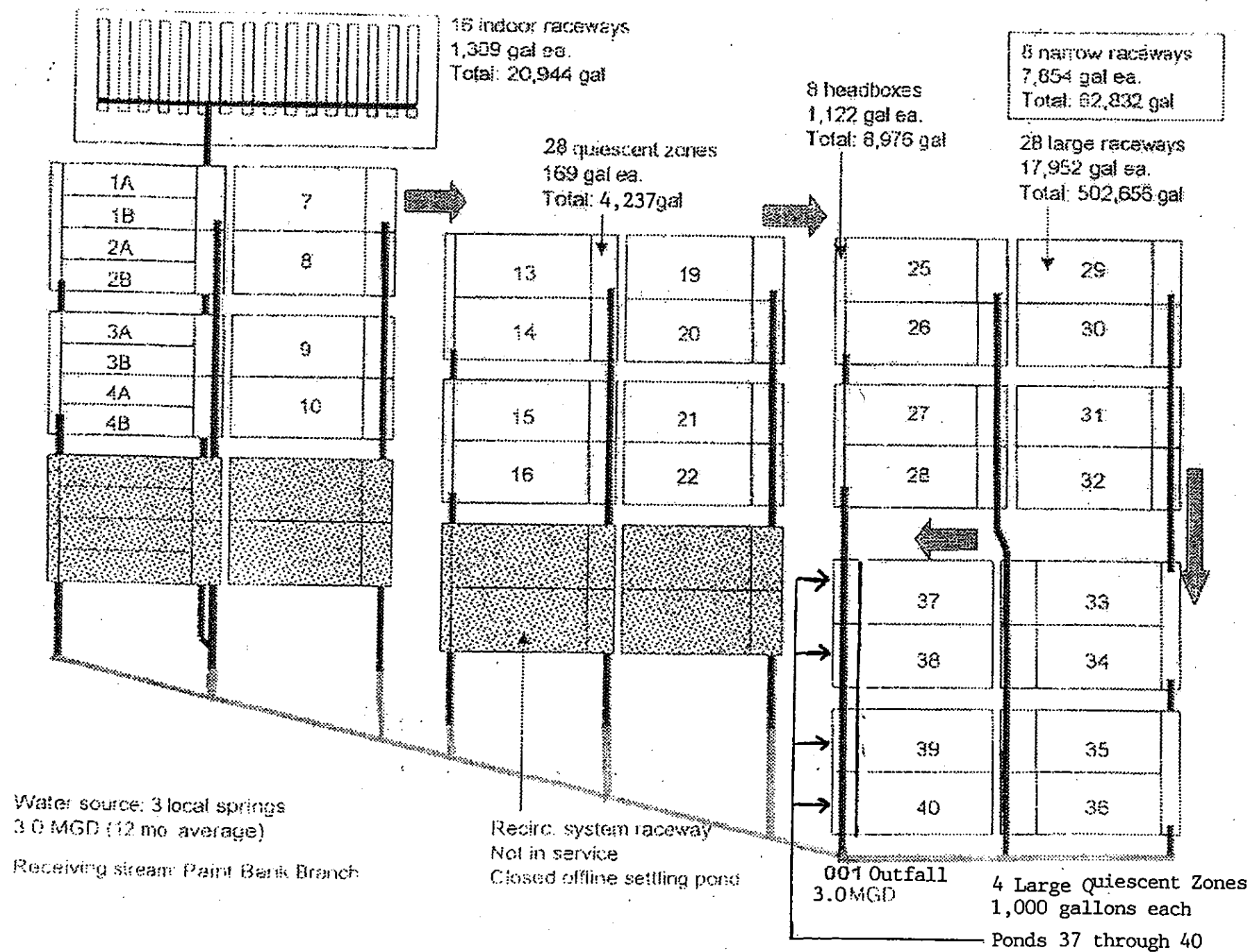
ATTACHMENT A

General Facility Information

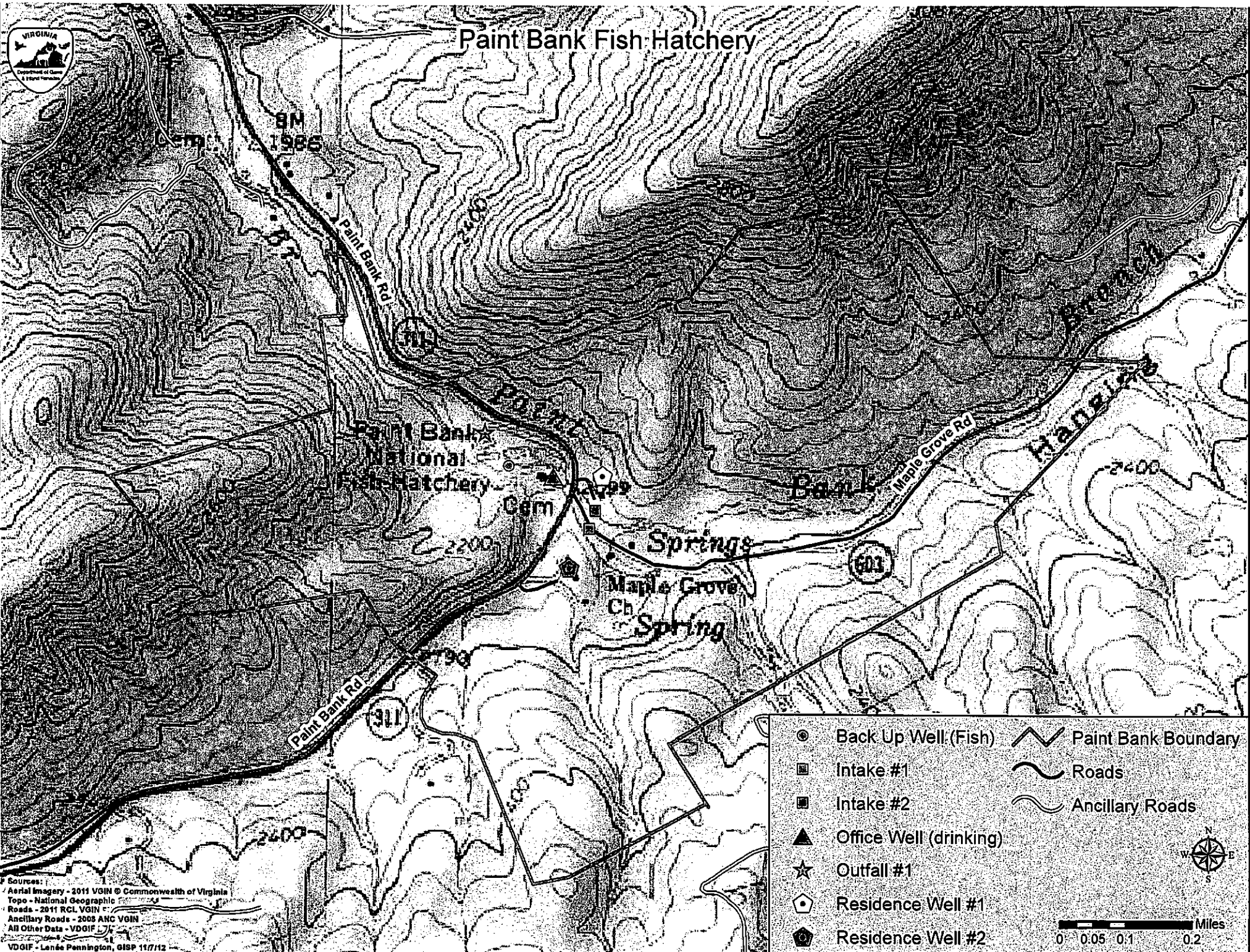
- 1. Schematic**
- 2. Topographic Map**
- 3. Site Visit Memo**
- 4. Rating Worksheet**

Paint Bank State Fish Hatchery

Water Flow Diagram



Paint Bank Fish Hatchery



Sources:
 Aerial Imagery - 2011 VGIN © Commonwealth of Virginia
 Topo - National Geographic
 Roads - 2011 RCL VGIN
 Ancillary Roads - 2008 ANC VGIN
 All Other Data - VDOIF
 VDOIF - Lenée Pennington, GISP 11/7/12

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY Blue Ridge Regional Office - Roanoke

3019 Peters Creek Road

Roanoke, VA 24019

SUBJECT: Site Visit – Paint Bank Fish Cultural Station
VPDES Permit No. VA91324

TO: File

FROM: Lynn V. Wise, Environmental Engineer, Sr.

DATE: January 29, 2013

On December 6, 2012, the DGIF Paint Bank Fish Cultural Station was visited to gather information as part of the VPDES permit reissuance process. Present representing DGIF was Mr. Brian Beers, Hatchery Superintendent.

The Paint Bank Fish Cultural Station is a trout production facility operated by the Virginia Department of Game & Inland Fisheries with an annual capacity of approximately 140,000 pounds of fish. Brook, brown, and rainbow trout are hatched and reared to 'catchable' size for stocking in state waters.

The water for operation of the hatchery is gravity fed from three local underground springs. Two groundwater wells are also available if necessary to supplement water flow to the facility. The well water is also used to fill the tanker trucks used for transporting the trout. There are a total of 52 raceways at the facility. Currently, there are sixteen indoor raceways that are used for the small, young fish and 36 outdoor raceways (28 large and eight narrow) that are used for the larger, older fish. Several of the previously used outdoor raceways were taken off-line and converted into a settling pond. About half of the water flowing to the facility goes directly to the outdoor raceways; the other half enters the hatchery building and flows through the indoor raceways before combining with the flow to the outdoor raceways. Based upon DMR data from the past 12 months, there is an average continuous flow through the facility of 2.37 MGD. The maximum daily flow was 3 MGD including cleaning operations. The wastewater discharges to Paint Bank Branch. At the discharge point, the creek was estimated to be approximately six feet wide; the creek expanded to about 12 feet wide below the discharge.

Each of the indoor raceways is cleaned daily during the nine (9) months per year it is in use with a soft bristle brush attached to a broom handle. The outdoor raceways are cleaned as needed, but typically once per month. Solids are vacuumed from the raceways and tailboxes and pumped to the plastic lined settling pond. Approximately once per year, about 4,000-6,000 gallons of settled solids are removed from the settling pond by a septic hauler and transported to the Western Virginia Water Authority Water Pollution Control Plant in Roanoke, VA, for further treatment.

A schematic of the facility is attached. The current permit for the facility authorizes discharges from nine (9) outfalls. These outfalls were consolidated into one discharge point in the summer of 2010; therefore, the proposed permit only authorizes a discharge from Outfall 001.

All storage occurs indoors; items include indoor and outdoor fish food, fish pharmaceuticals (formalin), bleach, and sodium thiosulfate.

NPDES PERMIT RATING WORK SHEET

NPDES NO. YA0091324

- ☐ Regular Addition
☐ Discretionary Addition
☐ Score change, but no status change
☐ Deletion

No Change

Facility Name: PAINT BANK FISH CULTURAL STATION

City: PAINT BANK, VA (CRAIG Co.)

Receiving Water: PAINT BANK BRANCH

Reach Number: _____

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate

☐ YES; score is 600 (stop here) ☒ NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

- ☐ YES; score is 700 (stop here)
☒ NO (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary SIC Code: 0273 Other SIC Codes: 0921
 Industrial Subcategory Code: 99 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3.	3	15	<input type="checkbox"/> 7.	7	35
<input checked="" type="checkbox"/> 1.	1	5	<input type="checkbox"/> 4.	4	20	<input type="checkbox"/> 8.	8	40
<input type="checkbox"/> 2.	2	10	<input type="checkbox"/> 5.	5	25	<input type="checkbox"/> 9.	9	45
			<input type="checkbox"/> 6.	6	30	<input type="checkbox"/> 10.	10	50

Code Number Checked: 1

Total Points Factor 1: 5

FACTOR 2: Flow/Stream Flow Volume (Complete either Section A or Section B; check only one)

Section A ☐ Wastewater Flow Only Considered

Wastewater Type (See Instructions)	Code	Points
Type I: Flow < 5 MGD	<input type="checkbox"/> 11	0
Flow 5 to 10 MGD	<input type="checkbox"/> 12	10
Flow > 10 to 50 MGD	<input type="checkbox"/> 13	20
Flow > 50 MGD	<input type="checkbox"/> 14	30
Type II: Flow < 1 MGD	<input type="checkbox"/> 21	10
Flow 1 to 5 MGD	<input type="checkbox"/> 22	20
Flow > 5 to 10 MGD	<input type="checkbox"/> 23	30
Flow > 10 MGD	<input type="checkbox"/> 24	50
Type III: Flow < 1 MGD	<input type="checkbox"/> 31	0
Flow 1 to 5 MGD	<input type="checkbox"/> 32	10
Flow > 5 to 10 MGD	<input type="checkbox"/> 33	20
Flow > 10 MGD	<input type="checkbox"/> 34	30

Section B ☐ Wastewater and Stream Flow Considered

Wastewater Type (See Instructions)	Percent of instream Wastewater Concentration at Receiving Stream Low Flow	Code	Points
Type I/III:	< 10 %	<input type="checkbox"/> 41	0
	10 % to < 50 %	<input type="checkbox"/> 42	10
	> 50 %	<input checked="" type="checkbox"/> 43	20
Type II:	< 10 %	<input type="checkbox"/> 51	0
	10 % to < 50 %	<input type="checkbox"/> 52	20
	> 50 %	<input type="checkbox"/> 53	30

Code Checked from Section A or B: 43
 Total Points Factor 2: 20

FACTOR 3: Conventional Pollutants
(only when limited by the permit)

NPDES NO:

A. Oxygen Demanding Pollutant: (check one)

☐ BOD ☐ COD ☐ Other: _____

Permit Limits: (check one)			Code	Points
<input type="checkbox"/>	< 100 lbs/day		1	0
<input type="checkbox"/>	100 to 1000 lbs/day		2	5
<input type="checkbox"/>	> 1000 to 3000 lbs/day		3	15
<input type="checkbox"/>	> 3000 lbs/day		4	20

Code Checked: NA

Points Scored: 0

B. Total Suspended Solids (TSS)

Permit Limits: (check one)			Code	Points
<input type="checkbox"/>	< 100 lbs/day		1	0
<input checked="" type="checkbox"/>	100 to 1000 lbs/day		2	5
<input type="checkbox"/>	> 1000 to 5000 lbs/day		3	15
<input type="checkbox"/>	> 5000 lbs/day		4	20

Code Checked: 2

Points Scored: 5

C. Nitrogen Pollutant: (check one)

☐ Ammonia ☐ Other: _____

Permit Limits: (check one)			Code	Points
<input type="checkbox"/>	Nitrogen Equivalent			
<input type="checkbox"/>	< 300 lbs/day		1	0
<input type="checkbox"/>	300 to 1000 lbs/day		2	5
<input type="checkbox"/>	> 1000 to 3000 lbs/day		3	15
<input type="checkbox"/>	> 3000 lbs/day		4	20

Code Checked: NA

Points Scored: 0

Total Points Factor 3: 5

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above referenced supply.

☐ YES (If yes, check toxicity potential number below)

☒ NO (If no, go to Factor 5)

Determine the *human health* toxicity potential from Appendix A. Use the same SIC code and subcategory reference as in Factor 1. (Be sure to use the human health toxicity group column ☐ check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3.	3	0	<input type="checkbox"/> 7.	7	15
<input type="checkbox"/> 1.	1	0	<input type="checkbox"/> 4.	4	0	<input type="checkbox"/> 8.	8	20
<input type="checkbox"/> 2.	2	0	<input type="checkbox"/> 5.	5	5	<input type="checkbox"/> 9.	9	25
			<input type="checkbox"/> 6.	6	10.	<input type="checkbox"/> 10.	10	30

Code Number Checked: NA

Total Points Factor 4: 0

FACTOR 5: Water Quality Factors

NPDES NO.

A. Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal effluent guidelines, or technology-based state effluent guidelines), or has a wasteload allocation been assigned to the discharge:

<input checked="" type="checkbox"/>	Yes	Code 1	Points 10
<input type="checkbox"/>	No	2	0

B. Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

<input checked="" type="checkbox"/>	Yes	Code 1	Points 0
<input type="checkbox"/>	No	2	5

C. Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

<input type="checkbox"/>	Yes	Code 1	Points 10
<input checked="" type="checkbox"/>	No	2	0

Code Number Checked: A 1 B 1 C 2

Points Factor 5: A 10 + B 0 + C 0 = 10 TOTAL

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from Factor 2): 43

Enter the multiplication factor that corresponds to the flow code: 0.10

Check appropriate facility HPRI Code (from PCS):

HPRI#	Code	HPRI Score	Flow Code	Multiplication Factor	
<input type="checkbox"/>	1	1	20	11, 31, or 41	0.00
<input type="checkbox"/>	2	2	0	12, 32, or 42	0.05
<input type="checkbox"/>	3	3	30	13, 33, or 43	0.10
<input checked="" type="checkbox"/>	4	4	0	14 or 34	0.15
<input type="checkbox"/>	5	5	20	21 or 51	0.10
				22 or 52	0.30
				23 or 53	0.60
				24	1.00

HPRI code checked: 4

Base Score: (HPRI Score) 0 X (Multiplication Factor) 0.1 = 0 (TOTAL POINTS)

B. Additional Points ☐ NEP Program

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

<input type="checkbox"/>	Yes	Code 1	Points 10
<input type="checkbox"/>	No	2	0

C. Additional Points ☐ Great Lakes Area of Concern

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see Instructions)

<input type="checkbox"/>	Yes	Code 1	Points 10
<input type="checkbox"/>	No	2	0

Code Number Checked:

A 4 B - C -

Points Factor 6: A 0 + B 0 + C 0 = 0 TOTAL

SCORE SUMMARY

NPDES NO.

Factor	Description	Total Points
1	Toxic Pollutant Potential	<u>5</u>
2	Flows/Streamflow Volume	<u>20</u>
3	Conventional Pollutants	<u>5</u>
4	Public Health Impacts	<u>0</u>
5	Water Quality Factors	<u>10</u>
6	Proximity to Near Coastal Waters	<u>0</u>
TOTAL (Factors 1 through 6)		<u>40</u>

S1. Is the total score equal to or greater than 80? ☐ Yes (Facility is a major) ☒ No

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

☒ No

☐ Yes (Add 500 points to the above score and provide reason below:

Reason:

NEW SCORE: 40

OLD SCORE: 40

Sybil V. Wise
Permit Reviewer's Name

540 362-6787
Phone Number

1/31/13
Date

ATTACHMENT B

Receiving Stream Information

- 1. Flow Frequency Memo**
- 2. Ambient Water Quality Monitoring
Data (2-POT030.66)**
- 3. 2010 Impaired Waters Fact Sheet**

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
Blue Ridge Regional Office

3019 Peters Creek Road

Roanoke, Virginia 24019

SUBJECT: Flow Frequency Determination
Paint Bank Fish Cultural Station – VPDES Permit No. VA0091324

TO: File

FROM: Lynn V. Wise, Environmental Engineer Sr.

DATE: January 29, 2013

The Paint Bank Fish Cultural Station discharges to Paint Bank Branch near Paint Bank, VA. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

The USGS has operated a continuous record gauge on Potts Creek near Covington, VA (#02014000) from 1929 to 1956 and from 1965 to present. The flow frequencies for the gauge and the discharge point are presented below. The values for the discharge point were determined using proportional drainage areas and do not address any withdrawals, discharges or springs lying upstream. The springs that feed Paint Bank Branch drain to Potts Creek and are eventually measured by the gauge downstream.

Potts Creek near Covington, VA (#02014000):

Drainage Area = 153 mi²

1Q30 = 15 cfs	High Flow 1Q10 = 27 cfs
1Q10 = 17 cfs	High Flow 7Q10 = 33 cfs
7Q10 = 18 cfs	High Flow 30Q10 = 46 cfs
30Q10 = 20 cfs	HM = 61 cfs
30Q5 = 22 cfs	

Paint Bank Branch at discharge point:

Drainage Area = 6.32 mi²

1Q30 = 0.62 cfs (0.40 MGD)	High Flow 1Q10 = 1.1 cfs (0.71 MGD)
1Q10 = 0.70 cfs (0.45 MGD)	High Flow 7Q10 = 1.36 cfs (0.88 MGD)
7Q10 = 0.74 cfs (0.48 MGD)	High Flow 30Q10 = 1.9 cfs (1.2 MGD)
30Q10 = 0.83 cfs (0.54 MGD)	HM = 2.5 cfs (1.6 MGD)
30Q5 = 0.91 cfs (0.59 MGD)	

The high flow months are January through May.

Watershed Code VAW-I10R
Station ID 2-POT030.66

				Parm. Code	00530	00600	00610	00630	00665	31648	82079
				Name	Residue, Total Nonfilterable (mg/l)	Nitrogen, Total (mg/l as N)	Nitrogen, Ammonia, Total (mg/l as N)	Nitrite + Nitrate, Total (mg/l as N)	Phosphorus, Total (mg/l as P)	E. Coli - MTEC-MF No/100ml	Turbidity, NTU
Collection Date	Time	Temp Celc	Do Probe	Field Ph							
07/22/2003	14:00	21.7	8.8	8.8	<3	0.34	0.09	0.12	0.01	380	2.1
09/02/2003	13:30	23	9.1	8.5	3	0.41	<0.04	0.16	0.02	50	2
11/13/2003	13:00	9.3	11.5	7.6	13	0.42	<0.04	0.11	0.03	>2000	19
01/12/2004	14:00	2.8	14.3	7.9	3	0.24	<0.04	0.17			2.1
03/03/2004	13:00	8.5	12.5	8	3	0.26	<0.04	0.14	0.02	<25	3.7
05/04/2004	12:30	11	11	8	<3	0.26	<0.04	0.12	0.01	<25	2.8
07/07/2004	13:00	22.5	9	8.2	5	0.45	<0.04	0.18	0.02	50	2.7
09/15/2004	13:00	17.5	9.5	8.3	<3	0.36	<0.04	0.17	0.02	100	5.2
11/08/2004	13:30	10.6	11.1	8.15	<3	0.35	<0.04	0.06	0.02	75	7.2
01/11/2005	12:00	7	11.7	8.2	<3	0.2	<0.04	0.13	0.01	25	3.4
03/15/2005	13:00	5	12.1	7.8	<3	0.29	<0.04	0.15	0.01	<25	3.8
05/02/2005	14:00	10	10.3	8.1	<3	0.16	<0.04	0.07	0.01	<25	3.8



2010 Impaired Waters

Categories 4 and 5 by DCR Watershed*

James River Basin

Fact Sheet for DCR Watershed: I10.*

Cause Group Code: I10R-01-BAC

Potts Creek

Location: Potts Creek mainstem from the mouth of Paint Bank Branch downstream to the Hamilton Branch confluence on Potts Creek.

City / County: Alleghany Co.

Use(s): Recreation

Cause(s)* /

VA Category: Escherichia coli/ 5A

2-POT030.66- (Above Rt. 18 Bridge near Campsite) The 2006 initial 303(d) Listing of these 9.51 mile waters reports escherichia coli (E.coli) exceeds the 235 cfu/100 ml instantaneous criterion in two of eight samples at 380 and greater than 2000 cfu/100 ml. The 2010 Integrated Report finds the same excursions as in 2008 Where escherichia coli (E.coli) exceeds the criterion in two of 11 samples with the same exceedance range as 2006.

Potts Creek

*DCR Watershed: I10 - Recreation

Estuary*
(Sq. Miles)

Reservoir*
(Acres)

River*
(Miles)

Escherichia coli - Total Impaired Size by Water Type:

9.51

Sources:

Livestock (Grazing or
Feeding Operations)

On-site Treatment Systems
(Septic Systems and Similar
Decentralized Systems)

Unspecified Domestic
Waste

Wildlife Other than
Waterfowl

*Header Information: Location, City/County, Cause/VA Category and Narratives; describe the entire extent of the Impairment. Sizes presented are for Assessment Units (AUs) lying within the DCR Watershed boundary noted above.



2010 Impaired Waters

Categories 4 and 5 by DCR Watershed*

James River Basin

Fact Sheet for DCR Watershed: I10.*

Cause Group Code: I10R-01-PH

Potts Creek

Location: Potts Creek mainstem from the confluence of Paint Bank Branch downstream to the mouth of Hamilton Branch on Potts Creek.

City / County: Alleghany Co.

Use(s): Aquatic Life

Cause(s)* /

VA Category: pH/ 5C

2-POT030.66- (Above the Route 18 Bridge near campsite). The 2004 Integrated Report (IR) records the initial 303(d) Listing of these waters where two of four pH measurements exceed the WQS alkaline criterion of 9.0 SU at 9.1 and 9.2 SU. The 2010 IR finds zero of 12 measurements indicating full support; however, there are no additional data beyond the 2008 IR. The 2006 IR records one of 10 measurements exceeding the alkaline criterion at 9.2 SU. The 2008 IR records the same excursion as 2006 from 13 pH measurements. The impaired 9.51 mile waters remain for pH alkaline conditions as data are insufficient for delisting. Potts Creek has historically had pH measurements in the range of 8.5 to 9.5. The high (alkaline) pH does not appear to have an adverse effect on the benthic community.

Potts Creek

*DCR Watershed: I10 - Aquatic Life

Estuary*
(Sq. Miles)

Reservoir*
(Acres)

River*
(Miles)

pH - Total Impaired Size by Water Type:

9.51

Sources:

Natural Conditions - Water
Quality Standards Use
Attainability Analyses
Needed

*Header Information: Location, City/County, Cause/VA Category and Narratives; describe the entire extent of the impairment. Sizes presented are for Assessment Units (AUs) lying within the DCR Watershed boundary noted above.



2010 Impaired Waters

Categories 4 and 5 by DCR Watershed*

James River Basin

Fact Sheet for DCR Watershed: I10.*

Cause Group Code: I10R-01-TEMP

Potts Creek

Location: Potts Creek from the Paint Bank Branch confluence downstream to the Alleghany / Craig County Line.

City / County: Alleghany Co.

Use(s): Aquatic Life

Cause(s)* /

VA Category: Temperature, water/ 5C

2-POT030.66- (Above the Route 18 Bridge near campsite). The 2010 (12 measurements) and 2008 (13 measurements) Integrated Reports find the same temperature excursions as in the 2006 IR initial 303(d) Listing where the Class V Temp criterion of 21 °C exceeds in three of 12 measurements. Temperature exceedances occur in July and September of 2003 and 2004 ranging from 21.7 to 23 °C.

Potts Creek

*DCR Watershed: I10 - Aquatic Life

Estuary*
(Sq. Miles)

Reservoir*
(Acres)

River*
(Miles)

Temperature, water - Total Impaired Size by Water Type:

5.54

Sources:

Natural Conditions - Water
Quality Standards Use
Attainability Analyses
Needed

*Header Information: Location, City/County, Cause/VA Category and Narratives; describe the entire extent of the Impairment. Sizes presented are for Assessment Units (AUs) lying within the DCR Watershed boundary noted above.

ATTACHMENT C

Effluent Screening/Limitations

- 1. DMR Data Summary**
- 2. Applicable Sections of 40 CFR Part 451**
- 3. Mix.Exe Printout**
- 4. WQS Spreadsheet (MSTRANTI)**
- 5. Stats.Exe Printout (Ammonia)**
- 6. DO Model Output from previous permit**

Paint Bank Fish Hatchery (VA0091324) - Outfall 001

Due Date	Flow (MGD)		pH (s.u.)		TSS (mg/l)		DO (mg/l)		NH ₃ (mg/l) Max (as N)	Settleable Solids (mg/l)		Temperature (°C)	
	Avg	Max	Min	Max	Avg	Max	Min	Avg		Avg	Max	Avg	Max
10-May-08	3.64	3.64	7.71	7.71	3	3	9.6	9.6		<QL	<QL	9.8	9.8
10-Jun-08	3.24	3.24	7.73	7.73	4	4	9.2	9.2		<QL	<QL	12.7	12.7
10-Jul-08	3.24	3.24	7.26	7.26	6	6	9.4	9.4		<QL	<QL	13.7	13.7
10-Aug-08	2.42	2.42	7.62	7.62	8	8	9.6	9.6		<QL	<QL	15.4	15.4
10-Sep-08	2.07	2.07	7.58	7.58	3	3	9.1	9.1		<QL	<QL	16.1	16.1
10-Oct-08	1.66	1.66	7.61	7.61	3	3	8.6	8.6	0.4	<QL	<QL	14.8	14.8
10-Nov-08	1.07	1.07	7.46	7.46	4	4	7.4	7.4		<QL	<QL	13	13
10-Dec-08	1.02	1.02	7.63	7.63	3	3	7.9	7.9		<QL	<QL	9.3	9.3
10-Jan-09	1.02	1.02	7.71	7.71	6	6	7.5	7.5		<QL	<QL	8.6	8.6
10-Feb-09	1.75	1.75	7.47	7.47	6	6	9.2	9.2		<QL	<QL	8.9	8.9
10-Mar-09	2.62	2.62	7.42	7.42	5	5	9.48	9.48		<QL	<QL	8	8
10-Apr-09	2.35	2.35	7.58	7.58	7	7	9.13	9.13	1.3	<QL	<QL	9.3	9.3
10-May-09	3.96	3.96	7.63	7.63	2	2	9.18	9.18		<QL	<QL	9.8	9.8
10-Jun-09	4.3	4.3	7.67	7.67	3	3	9.1	9.1		<QL	<QL	11.2	11.2
10-Jul-09	4.6	4.6	7.69	7.69	2	2	8.9	8.9		<QL	<QL	12.9	12.9
10-Aug-09	3.31	3.31	7.53	7.53	1	1	8.7	8.7		<QL	<QL	13.3	13.3
10-Sep-09	2.24	2.24	7.64	7.64	4	4	7.9	7.9		<QL	<QL	13.4	13.4
10-Oct-09	2.33	2.33	7.72	7.72	8	8	8.2	8.2	0.4	0.1	0.1	11.9	11.9
10-Nov-09	2.15	2.15	7.61	7.61	4	4	8.4	8.4		<QL	<QL	11.2	11.2
10-Dec-09	2.57	2.57	7.72	7.72	3	3	9.1	9.1		<QL	<QL	9.8	9.8
10-Jan-10	2.57	2.57	7.64	7.64	2	2	10.1	10.1		<QL	<QL	8.8	8.8
10-Feb-10	3.46	3.46	7.69	7.69	2	2	9.3	9.3		<QL	<QL	8.6	8.6
10-Mar-10	2.96	2.96	7.64	7.64	2	2	9.1	9.1		<QL	<QL	8.5	8.5
10-Apr-10	3.11	3.11	7.53	7.53	5	5	9.4	9.4	6	<QL	<QL	10.2	10.2
10-May-10	2.85	2.85	7.67	7.67	2	2	8.8	8.8		<QL	<QL	12.7	12.7
10-Jun-10	3.18	3.18	7.65	7.65	3	3	9.1	9.1		<QL	<QL	13.6	13.6
10-Jul-10	2.98	2.98	7.71	7.71	4	4	8.8	8.8		<QL	<QL	13.5	13.5
10-Aug-10	2.74	2.74	7.81	7.81	2	2	8.12	8.12		<QL	<QL	13.2	13.2
10-Sep-10	1.71	1.71	7.64	7.64	3	3	8.24	8.24		<QL	<QL	15.1	15.1
10-Oct-10	1.71	1.71	7.72	7.72	2	2	8.11	8.11	1.4	<QL	<QL	14.9	14.9
10-Nov-10	1.71	1.71	7.69	7.69	3	3	7.93	7.93		<QL	<QL	12.2	12.2
10-Dec-10	1.66	1.66	7.65	7.65	2	2	9.1	9.1		<QL	<QL	10.2	10.2
10-Jan-11	1.7	1.7	7.73	7.73	4	4	8.7	8.7		<QL	<QL	8.1	8.1
10-Feb-11	1.7	1.7	7.78	7.78	2	2	8.4	8.4		<QL	<QL	8.3	8.3
10-Mar-11	1.7	1.7	7.71	7.71	5	5	8.3	8.3		<QL	<QL	8.9	8.9
10-Apr-11	2.61	2.61	7.68	7.68	4	4	8.9	8.9	0.3	<QL	<QL	10.3	10.3
10-May-11	3	3	7.7	7.7	2	2	8.8	8.8		<QL	<QL	10.8	10.8
10-Jun-11	3.89	3.89	7.65	7.65	3	3	9.1	9.1		<QL	<QL	11.2	11.2
10-Jul-11	3.42	3.42	7.71	7.71	<QL	<QL	8.9	8.9		<QL	<QL	11.6	11.6
10-Aug-11	2.68	2.68	7.74	7.74	3	3	8	8		<QL	<QL	12.9	12.9
10-Sep-11	2.63	2.63	7.68	7.68	3	3	7.4	7.4		<QL	<QL	13.2	13.2
10-Oct-11	2.45	2.45	7.64	7.64	2	2	7.1	7.1	0.5	<QL	<QL	13.1	13.1
10-Nov-11	2.07	2.07	7.71	7.71	<QL	<QL	8	8		<QL	<QL	11.8	11.8
10-Dec-11	1.9	1.9	7.81	7.81	1	1	8.2	8.2		<QL	<QL	12	12
10-Jan-12	2.46	2.46	7.71	7.71	1	1	8.4	8.4		<QL	<QL	9.2	9.2
10-Feb-12	2.91	2.91	7.67	7.67	13	13	9.3	9.3		0.1	0.1	9.2	9.2
10-Mar-12	2.71	2.71	7.7	7.7	4	4	8	8		<QL	<QL	9.6	9.6
10-Apr-12	2.91	2.91	7.68	7.68	<QL	<QL	8.7	8.7	<QL	<QL	<QL	10.2	10.2
10-May-12	3	3	7.7	7.7	2	2	8.4	8.4		<QL	<QL	10.9	10.9
10-Jun-12	3	3	7.62	7.62	1	1	8.5	8.5		<QL	<QL	11	11
10-Jul-12	2.29	2.29	7.71	7.71	2	2	8.1	8.1		<QL	<QL	14.1	14.1
10-Aug-12	2.01	2.01	7.72	7.72	2	2	7.8	7.8		<QL	<QL	14.6	14.6
10-Sep-12	1.7	1.7	7.73	7.73	4	4	7.4	7.4		<QL	<QL	14	14
10-Oct-12	1.79	1.79	7.7	7.7	2	2	7.1	7.1	0.47	<QL	<QL	12.7	12.7
10-Nov-12	1.79	1.79	7.64	7.64	2	2	7.7	7.7		<QL	<QL	12.2	12.2
LIMIT	NL	NL	NL	NL	10	15	5.6	6.8	NL	0.1	0.5	NL	NL

Paint Bank Fish Hatchery (VA0091324) - Outfall 003

Due Date	Flow (MGD)		TSS (mg/l)		NH ₃ (mg/l)	Settleable Solids (mg/l)	
	Avg	Max	Avg	Max	Max (as N)	Avg	Max
10-May-08	0.002	0.002	18	18		0.2	0.2
10-Jun-08	0.002	0.002	3	3		<QL	<QL
10-Jul-08	0.001	0.001	8	8		0.1	0.1
10-Aug-08							
10-Sep-08							
10-Oct-08	0.003	0.003	1	1	<QL	<QL	<QL
10-Nov-08	0.04	0.04	1	1		<QL	<QL
10-Dec-08	0.016	0.016	1	1		<QL	<QL
10-Jan-09	16	0.016	1	1		<QL	<QL
10-Feb-09	0.002	0.002	3	3		<QL	<QL
10-Mar-09	0.003	0.003	1	1		<QL	<QL
10-Apr-09	0.003	0.003	1	1	0.1	<QL	<QL
10-May-09	0.003	0.003	2	2		<QL	<QL
10-Jun-09	0.003	0.003	2	2		<QL	<QL
10-Jul-09	0.003	0.003	2	2		<QL	<QL
10-Aug-09	0.046	0.046	2	2		<QL	<QL
10-Sep-09	0.045	0.045	1	1		<QL	<QL
10-Oct-09	0.045	0.045	<QL	<QL	<QL	<QL	<QL
10-Nov-09	0.045	0.045	<QL	<QL		<QL	<QL
10-Dec-09	0.045	0.045	<QL	<QL		<QL	<QL
10-Jan-10	0.045	0.045	3	3		<QL	<QL
10-Feb-10	0.045	0.045	1	1		<QL	<QL
10-Mar-10	0.045	0.045	1	1		<QL	<QL
10-Apr-10	0.045	0.045	4	4	<QL	<QL	<QL
10-May-10							
10-Jun-10							
10-Jul-10							
10-Aug-10							
10-Sep-10							
10-Oct-10							
10-Nov-10							
10-Dec-10							
10-Jan-11							
10-Feb-11							
10-Mar-11							
10-Apr-11							
10-May-11							
10-Jun-11							
10-Jul-11							
10-Aug-11							
10-Sep-11							
10-Oct-11							
10-Nov-11							
10-Dec-11							
10-Jan-12							
10-Feb-12							
10-Mar-12							
10-Apr-12							
10-May-12							
10-Jun-12							
10-Jul-12							
10-Aug-12							
10-Sep-12							
10-Oct-12							
10-Nov-12							
LIMIT	NL	NL	10	15	NL	0.1	0.5

Paint Bank Fish Hatchery (VA0091324) - Outfalls 007, 008, and 009

Outfall	DMR Due Date		Limit			
			Avg	Max	Avg	Max
007	10-Jul-08	FLOW	0.02	0.02	NL	NL
		TSS	6	6	10	15
		AMMONIA, AS N	0.1	0.1	NL	NL
		SETTLEABLE SOLIDS	0.2	0.2	0.1	0.5
008	10-Jun-08	FLOW	0.02	0.02	NL	NL
		TSS	20	20	10	15
		AMMONIA, AS N	0.35	0.35	NL	NL
		SETTLEABLE SOLIDS	0.1	0.1	0.1	0.5
	10-Jul-09	FLOW	0.026	0.026	NL	NL
		TSS	1	1	10	15
		AMMONIA, AS N	0.2	0.2	NL	NL
		SETTLEABLE SOLIDS	<QL	<QL	0.1	0.5
009	10-Mar-09	FLOW	0.008	0.008	NL	NL
		TSS	4	4	10	15
		AMMONIA, AS N	0.7	0.7	NL	NL
		SETTLEABLE SOLIDS	0.1	0.1	0.1	0.5
	10-May-09	FLOW	0.017	0.017	NL	NL
		TSS	19	19	10	15
		AMMONIA, AS N	0.2	0.2	NL	NL
		SETTLEABLE SOLIDS	0.1	0.1	0.1	0.5
	10-May-10	FLOW	2.85	2.85	NL	NL
		TSS	2	2	10	15
		AMMONIA, AS N	0.4	0.4	NL	NL
		SETTLEABLE SOLIDS	<QL	<QL	0.1	0.5
	10-Jun-10	FLOW	3.18	3.18	NL	NL
		TSS	5	5	10	15
		AMMONIA, AS N	0.2	0.2	NL	NL
		SETTLEABLE SOLIDS	<QL	<QL	0.1	0.5

ELECTRONIC CODE OF FEDERAL REGULATIONS

e-CFR Data is current as of March 12, 2013

Title 40: Protection of Environment

PART 451—CONCENTRATED AQUATIC ANIMAL PRODUCTION POINT SOURCE CATEGORY

Contents

- § 451.1 General applicability.
- § 451.2 General definitions.
- § 451.3 General reporting requirements.

Subpart A—Flow-Through and Recirculating Systems Subcategory

- § 451.10 Applicability.
- § 451.11 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).
- § 451.12 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).
- § 451.13 Effluent limitations attainable by the application of the best conventional technology (BCT).
- § 451.14 New source performance standards (NSPS).

Subpart B—Net Pen Subcategory

- § 451.20 Applicability.
- § 451.21 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).
- § 451.22 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).
- § 451.23 Effluent limitations attainable by the application of the best conventional technology (BCT).
- § 451.24 New source performance standards (NSPS).

AUTHORITY: 7 U.S.C. 135 *et seq.*, 136-136y; 15 U.S.C. 2001, 2003, 2005, 2006, 2601-2671, 21 U.S.C. 331j, 346a, 348; 31 U.S.C. 9701; 33 U.S.C. 1251 *et seq.*, 1311, 1313d, 1314, 1318, 1321, 1326, 1330, 1342, 1344, 1345(d) and (e), 1361; 42 U.S.C. 241, 242b, 243, 246, 300f, 300g, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-2, 300j-3, 300j-4, 300j-9, 1857 *et seq.*, 6901-6992k, 7401-7671q, 7542, 9601-9657, 11023, 11048; E.O. 11735, 38 FR 21243, 3 CFR, 1971-1975 Comp., 973.

SOURCE: 69 FR 51927, Aug. 23, 2004, unless otherwise noted.

§ 451.1 General applicability.

As defined more specifically in each subpart, this part applies to discharges from concentrated aquatic animal production facilities as defined at 40 CFR 122.24 and appendix C of 40 CFR part 122. This part applies to the discharges of pollutants from facilities that produce 100,000 pounds or more of aquatic animals per year in a flow-through, recirculating, net pen or submerged cage system.

§ 451.2 General definitions.

As used in this part:

- (a) The general definitions and abbreviations in 40 CFR part 401 apply.
- (b) *Approved dosage* means the dose of a drug that has been found to be safe and effective under the conditions of a new animal drug application.
- (c) *Aquatic animal containment system* means a culture or rearing unit such as a raceway, pond, tank, net or other structure used to contain, hold or produce aquatic animals. The containment system

includes structures designed to hold sediments and other materials that are part of a wastewater treatment system.

(d) *Concentrated aquatic animal production facility* is defined at 40 CFR 122.24 and appendix C of 40 CFR part 122.

(e) *Drug* means any substance defined as a drug in section 201(g)(1) of the Federal Food, Drug and Cosmetic Act (21 U.S.C. 321).

(f) *Extralabel drug use* means a drug approved under the Federal Food, Drug and Cosmetic Act that is not used in accordance with the approved label directions, see 21 CFR part 530.

(g) *Flow-through system* means a system designed to provide a continuous water flow to waters of the United States through chambers used to produce aquatic animals. Flow-through systems typically use rearing units that are either raceways or tank systems. Rearing units referred to as raceways are typically long, rectangular chambers at or below grade, constructed of earth, concrete, plastic, or metal to which water is supplied by nearby rivers or springs. Rearing units comprised of tank systems use circular or rectangular tanks and are similarly supplied with water to raise aquatic animals. The term does not include net pens.

(h) *Investigational new animal drug (INAD)* means a drug for which there is a valid exemption in effect under section 512(j) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. 360b(j), to conduct experiments.

(i) *New animal drug application* is defined in 512(b)(1) of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 360b(b)(1)).

(j) *Net pen system* means a stationary, suspended or floating system of nets, screens, or cages in open waters of the United States. Net pen systems typically are located along a shore or pier or may be anchored and floating offshore. Net pens and submerged cages rely on tides and currents to provide a continual supply of high-quality water to the animals in production.

(k) *Permitting authority* means EPA or the State agency authorized to administer the National Pollutant Discharge Elimination System permitting program for the receiving waters into which a facility subject to this part discharges.

(l) *Pesticide* means any substance defined as a "pesticide" in section 2(u) of the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136(u)).

(m) *Real-time feed monitoring* means a system designed to track the rate of feed consumption and to detect uneaten feed passing through the nets at a net pen facility. These systems may rely on a combination of visual observation and hardware, including, but not limited to, devices such as video cameras, digital scanning sonar, or upweller systems that allow facilities to determine when to cease feeding the aquatic animals. Visual observation alone from above the pens does not constitute real-time monitoring.

(n) *Recirculating system* means a system that filters and reuses water in which the aquatic animals are produced prior to discharge. Recirculating systems typically use tanks, biological or mechanical filtration, and mechanical support equipment to maintain high quality water to produce aquatic animals.

§ 451.3 General reporting requirements.

(a) *Drugs.* Except as noted below, a permittee subject to this part must notify the permitting authority of the use in a concentrated aquatic animal production facility subject to this part of any investigational new animal drug (INAD) or any extralabel drug use where such a use may lead to a discharge of the drug to waters of the U.S. Reporting is not required for an INAD or extralabel drug use that has been previously approved by FDA for a different species or disease if the INAD or extralabel use is at or below the approved dosage and involves similar conditions of use.

(1) The permittee must provide a written report to the permitting authority of an INAD's impending use within 7 days of agreeing or signing up to participate in an INAD study. The written report must identify the INAD to be used, method of use, the dosage, and the disease or condition the INAD is intended to treat.

(2) For INADs and extralabel drug uses, the permittee must provide an oral report to the permitting authority as soon as possible, preferably in advance of use, but no later than 7 days after initiating use of that drug. The oral report must identify the drugs used, method of application, and the reason for using that drug.

(3) For INADs and extralabel drug uses, the permittee must provide a written report to the permitting authority within 30 days after initiating use of that drug. The written report must identify the drug used and include: the reason for treatment, date(s) and time(s) of the addition (including duration), method of application; and the amount added.

(b) Failure in, or damage to, the structure of an aquatic animal containment system resulting in an unanticipated material discharge of pollutants to waters of the U.S. In accordance with the following procedures, any permittee subject to this part must notify the permitting authority when there is a reportable failure.

(1) The permitting authority may specify in the permit what constitutes reportable damage and/or a material discharge of pollutants, based on a consideration of production system type, sensitivity of the receiving waters and other relevant factors.

(2) The permittee must provide an oral report within 24 hours of discovery of any reportable failure or damage that results in a material discharge of pollutants, describing the cause of the failure or damage in the containment system and identifying materials that have been released to the environment as a result of this failure.

(3) The permittee must provide a written report within 7 days of discovery of the failure or damage documenting the cause, the estimated time elapsed until the failure or damage was repaired, an estimate of the material released as a result of the failure or damage, and steps being taken to prevent a recurrence.

(c) In the event a spill of drugs, pesticides or feed occurs that results in a discharge to waters of the U.S., the permittee must provide an oral report of the spill to the permitting authority within 24 hours of its occurrence and a written report within 7 days. The report shall include the identity and quantity of the material spilled.

(d) *Best management practices (BMP) plan.* The permittee subject to this part must:

(1) Develop and maintain a plan on site describing how the permittee will achieve the requirements of § 451.11(a) through (e) or § 451.21(a) through (h), as applicable.

(2) Make the plan available to the permitting authority upon request.

(3) The permittee subject to this part must certify in writing to the permitting authority that a BMP plan has been developed.

Subpart A—Flow-Through and Recirculating Systems Subcategory

§ 451.10 Applicability.

This subpart applies to the discharge of pollutants from a concentrated aquatic animal production facility that produces 100,000 pounds or more per year of aquatic animals in a flow-through or recirculating system.

§ 451.11 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must meet the following requirements, expressed as practices (or any modification to these requirements as determined by the permitting authority based on its exercise of its best professional judgment) representing the application of BPT:

(a) *Solids control.* The permittee must:

(1) Employ efficient feed management and feeding strategies that limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of aquatic

animal growth in order to minimize potential discharges of uneaten feed and waste products to waters of the U.S.

(2) In order to minimize the discharge of accumulated solids from settling ponds and basins and production systems, identify and implement procedures for routine cleaning of rearing units and off-line settling basins, and procedures to minimize any discharge of accumulated solids during the inventorying, grading and harvesting aquatic animals in the production system.

(3) Remove and dispose of aquatic animal mortalities properly on a regular basis to prevent discharge to waters of the U.S., except in cases where the permitting authority authorizes such discharge in order to benefit the aquatic environment.

(b) *Materials storage.* The permittee must:

(1) Ensure proper storage of drugs, pesticides, and feed in a manner designed to prevent spills that may result in the discharge of drugs, pesticides or feed to waters of the U.S.

(2) Implement procedures for properly containing, cleaning, and disposing of any spilled material.

(c) *Structural maintenance.* The permittee must:

(1) Inspect the production system and the wastewater treatment system on a routine basis in order to identify and promptly repair any damage.

(2) Conduct regular maintenance of the production system and the wastewater treatment system in order to ensure that they are properly functioning.

(d) *Recordkeeping.* The permittee must:

(1) In order to calculate representative feed conversion ratios, maintain records for aquatic animal rearing units documenting the feed amounts and estimates of the numbers and weight of aquatic animals.

(2) Keep records documenting the frequency of cleaning, inspections, maintenance and repairs.

(e) *Training.* The permittee must:

(1) In order to ensure the proper clean-up and disposal of spilled material adequately train all relevant facility personnel in spill prevention and how to respond in the event of a spill.

(2) Train staff on the proper operation and cleaning of production and wastewater treatment systems including training in feeding procedures and proper use of equipment.

§ 451.12 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must meet the following requirements representing the application of BAT: The limitations are the same as the corresponding limitations specified in § 451.11.

§ 451.13 Effluent limitations attainable by the application of the best conventional technology (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must meet the following requirements representing the application of BCT: The limitations are the same as the corresponding limitations specified in § 451.11.

§ 451.14 New source performance standards (NSPS).

Any point source subject to this subpart that is a new source must meet the following requirements: The standards are the same as the corresponding limitations specified in § 451.11.

Subpart B—Net Pen Subcategory

Mixing Zone Predictions for

Paint Bank Fish Hatchery

Effluent Flow = 3.0 MGD
Stream 7Q10 = 0.48 MGD
Stream 30Q10 = 0.54 MGD
Stream 1Q10 = 0.45 MGD
Stream slope = 0.03 ft/ft
Stream width = 12 ft
Bottom scale = 3
Channel scale = 2

Mixing Zone Predictions @ 7Q10

Depth = .3799 ft
Length = 197.13 ft
Velocity = 1.1815 ft/sec
Residence Time = .0019 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .384 ft
Length = 195.28 ft
Velocity = 1.1892 ft/sec
Residence Time = .0019 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .378 ft
Length = 197.99 ft
Velocity = 1.1775 ft/sec
Residence Time = .0467 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Paint Bank Fish Cultural Station

Permit No.: VA0091324

Receiving Stream: Paint Bank Branch

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO₃) = 100 mg/L
 90% Temperature (Annual) = 22.4 deg C
 90% Temperature (Wet season) = 10.5 deg C
 90% Maximum pH = 8.5 SU
 10% Maximum pH = 7.8 SU
 Tier Designation (1 or 2) = 2
 Public Water Supply (PWS) Y/N? = n
 Trout Present Y/N? = y
 Early Life Stages Present Y/N? = y

Stream Flows

1Q10 (Annual) = 0.45 MGD
 7Q10 (Annual) = 0.48 MGD
 30Q10 (Annual) = 0.54 MGD
 1Q10 (Wet season) = 0.71 MGD
 30Q10 (Wet season) = 1.2 MGD
 30Q5 = 0.59 MGD
 Harmonic Mean = 1.6 MGD

Mixing Information

Annual - 1Q10 Mix = 100 %
 - 7Q10 Mix = 100 %
 - 30Q10 Mix = 100 %
 Wet Season - 1Q10 Mix = 100 %
 - 30Q10 Mix = 100 %

Effluent Information

Mean Hardness (as CaCO₃) = 100 mg/L
 90% Temp (Annual) = 14.4 deg C
 90% Temp (Wet season) = 8.5 deg C
 90% Maximum pH = 7.7 SU
 10% Maximum pH = 7.5 SU
 Discharge Flow = 3 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	5	--	--	na	9.9E+02	--	--	na	1.2E+03	--	--	na	1.0E+02	--	--	na	1.2E+02	--	--	na	1.2E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	1.1E+01	--	--	na	9.3E-01	--	--	na	1.1E+00	--	--	na	1.1E+00
Acrylonitrile ^C	0	--	--	na	2.5E+00	--	--	na	3.8E+00	--	--	na	2.5E-01	--	--	na	3.8E-01	--	--	na	3.8E-01
Aldrin ^C	0	3.0E+00	--	na	5.0E-04	3.5E+00	--	na	7.7E-04	7.5E-01	--	na	5.0E-05	8.6E-01	--	na	7.7E-05	8.6E-01	--	na	7.7E-05
Ammonia-N (mg/l) (Yearly)	0	8.84E+00	3.11E+00	na	--	1.02E+01	3.67E+00	na	--	2.21E+00	7.78E-01	na	--	2.54E+00	9.18E-01	na	--	2.54E+00	9.18E-01	na	--
Ammonia-N (mg/l) (High Flow)	0	8.45E+00	3.11E+00	na	--	1.05E+01	4.35E+00	na	--	2.11E+00	7.77E-01	na	--	2.61E+00	1.09E+00	na	--	2.61E+00	1.09E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.8E+04	--	--	na	4.0E+03	--	--	na	4.8E+03	--	--	na	4.8E+03
Antimony	0	--	--	na	6.4E+02	--	--	na	7.7E+02	--	--	na	6.4E+01	--	--	na	7.7E+01	--	--	na	7.7E+01
Arsenic	0	3.4E+02	1.5E+02	na	--	3.9E+02	1.7E+02	na	--	8.5E+01	3.8E+01	na	--	9.8E+01	4.4E+01	na	--	9.8E+01	4.4E+01	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Benzene ^C	0	--	--	na	5.1E+02	--	--	na	7.8E+02	--	--	na	5.1E+01	--	--	na	7.8E+01	--	--	na	7.8E+01
Benzidine ^C	0	--	--	na	2.0E-03	--	--	na	3.1E-03	--	--	na	2.0E-04	--	--	na	3.1E-04	--	--	na	3.1E-04
Benzo (a) anthracene ^C	0	--	--	na	1.8E-01	--	--	na	2.8E-01	--	--	na	1.8E-02	--	--	na	2.8E-02	--	--	na	2.8E-02
Benzo (b) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	2.8E-01	--	--	na	1.8E-02	--	--	na	2.8E-02	--	--	na	2.8E-02
Benzo (k) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	2.8E-01	--	--	na	1.8E-02	--	--	na	2.8E-02	--	--	na	2.8E-02
Benzo (a) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	2.8E-01	--	--	na	1.8E-02	--	--	na	2.8E-02	--	--	na	2.8E-02
Bis(2-Chloroethyl) Ether ^C	0	--	--	na	5.3E+00	--	--	na	8.1E+00	--	--	na	5.3E-01	--	--	na	8.1E-01	--	--	na	8.1E-01
Bis(2-Chloroisopropyl) Ether	0	--	--	na	6.5E+04	--	--	na	7.8E+04	--	--	na	6.5E+03	--	--	na	7.8E+03	--	--	na	7.8E+03
Bis 2-Ethylhexyl Phthalate ^C	0	--	--	na	2.2E+01	--	--	na	3.4E+01	--	--	na	2.2E+00	--	--	na	3.4E+00	--	--	na	3.4E+00
Bromoform ^C	0	--	--	na	1.4E+03	--	--	na	2.1E+03	--	--	na	1.4E+02	--	--	na	2.1E+02	--	--	na	2.1E+02
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	2.3E+03	--	--	na	1.9E+02	--	--	na	2.3E+02	--	--	na	2.3E+02
Cadmium	0	3.9E+00	1.1E+00	na	--	4.5E+00	1.3E+00	na	--	9.8E-01	2.8E-01	na	--	1.1E+00	3.3E-01	na	--	1.1E+00	3.3E-01	na	--
Carbon Tetrachloride ^C	0	--	--	na	1.6E+01	--	--	na	2.5E+01	--	--	na	1.6E+00	--	--	na	2.5E+00	--	--	na	2.5E+00
Chlordane ^C	0	2.4E+00	4.3E-03	na	8.1E-03	2.8E+00	5.0E-03	na	1.2E-02	6.0E-01	1.1E-03	na	8.1E-04	6.9E-01	1.2E-03	na	1.2E-03	6.9E-01	1.2E-03	na	1.2E-03
Chloride	0	8.6E+05	2.3E+05	na	--	9.9E+05	2.7E+05	na	--	2.2E+05	5.8E+04	na	--	2.5E+05	6.7E+04	na	--	2.5E+05	6.7E+04	na	--
TRC	0	1.9E+01	1.1E+01	na	--	2.2E+01	1.3E+01	na	--	4.8E+00	2.8E+00	na	--	5.5E+00	3.2E+00	na	--	5.6E+00	3.2E+00	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.9E+03	--	--	na	1.6E+02	--	--	na	1.9E+02	--	--	na	1.9E+02

Parameter (ug/l unless noted)	Background Conc	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^c	0	--	--	na	1.3E+02	--	--	na	2.0E+02	--	--	na	1.3E+01	--	--	na	2.0E+01	--	--	na	2.0E+01
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.3E+04	--	--	na	1.1E+03	--	--	na	1.3E+03	--	--	na	1.3E+03
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.9E+03	--	--	na	1.6E+02	--	--	na	1.9E+02	--	--	na	1.9E+02
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.8E+02	--	--	na	1.5E+01	--	--	na	1.8E+01	--	--	na	1.8E+01
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	9.5E-02	4.8E-02	na	--	2.1E-02	1.0E-02	na	--	2.4E-02	1.2E-02	na	--	2.4E-02	1.2E-02	na	--
Chromium III	0	5.7E+02	7.4E+01	na	--	6.8E+02	8.6E+01	na	--	1.4E+02	1.9E+01	na	--	1.6E+02	2.1E+01	na	--	1.6E+02	2.1E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.8E+01	1.3E+01	na	--	4.0E+00	2.8E+00	na	--	4.6E+00	3.2E+00	na	--	4.6E+00	3.2E+00	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	1.0E+01	--	--	--	1.2E+01	--	--	--	na	--
Chrysene ^c	0	--	--	na	1.8E-02	--	--	na	2.8E-02	--	--	na	1.8E-03	--	--	na	2.8E-03	--	--	na	2.8E-03
Copper	0	1.3E+01	9.0E+00	na	--	1.5E+01	1.0E+01	na	--	3.4E+00	2.2E+00	na	--	3.9E+00	2.6E+00	na	--	3.9E+00	2.6E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.5E+01	6.0E+00	na	1.9E+04	5.5E+00	1.3E+00	na	1.6E+03	6.3E+00	1.5E+00	na	1.9E+03	6.3E+00	1.5E+00	na	1.9E+03
DDD ^c	0	--	--	na	3.1E-03	--	--	na	4.8E-03	--	--	na	3.1E-04	--	--	na	4.8E-04	--	--	na	4.8E-04
DDE ^c	0	--	--	na	2.2E-03	--	--	na	3.4E-03	--	--	na	2.2E-04	--	--	na	3.4E-04	--	--	na	3.4E-04
DDT ^c	0	1.1E+00	1.0E-03	na	2.2E-03	1.3E+00	1.2E-03	na	3.4E-03	2.8E-01	2.5E-04	na	2.2E-04	3.2E-01	2.9E-04	na	3.4E-04	3.2E-01	2.9E-04	na	3.4E-04
Demeton	0	--	1.0E-01	na	--	--	1.2E-01	na	--	--	2.5E-02	na	--	--	2.9E-02	na	--	--	2.9E-02	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	2.0E-01	2.0E-01	na	--	4.3E-02	4.3E-02	na	--	4.9E-02	4.9E-02	na	--	4.9E-02	4.9E-02	na	--
Dibenz(a,h)anthracene ^c	0	--	--	na	1.8E-01	--	--	na	2.8E-01	--	--	na	1.8E-02	--	--	na	2.8E-02	--	--	na	2.8E-02
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.6E+03	--	--	na	1.3E+02	--	--	na	1.6E+02	--	--	na	1.6E+02
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	1.1E+03	--	--	na	9.6E+01	--	--	na	1.1E+02	--	--	na	1.1E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	2.3E+02	--	--	na	1.9E+01	--	--	na	2.3E+01	--	--	na	2.3E+01
3,3-Dichlorobenzidine ^c	0	--	--	na	2.8E-01	--	--	na	4.3E-01	--	--	na	2.8E-02	--	--	na	4.3E-02	--	--	na	4.3E-02
Dichlorobromomethane ^c	0	--	--	na	1.7E+02	--	--	na	2.6E+02	--	--	na	1.7E+01	--	--	na	2.6E+01	--	--	na	2.6E+01
1,2-Dichloroethane ^c	0	--	--	na	3.7E+02	--	--	na	5.7E+02	--	--	na	3.7E+01	--	--	na	5.7E+01	--	--	na	5.7E+01
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	8.5E+03	--	--	na	7.1E+02	--	--	na	8.5E+02	--	--	na	8.5E+02
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.2E+04	--	--	na	1.0E+03	--	--	na	1.2E+03	--	--	na	1.2E+03
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	3.5E+02	--	--	na	2.9E+01	--	--	na	3.5E+01	--	--	na	3.5E+01
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,2-Dichloropropane ^c	0	--	--	na	1.5E+02	--	--	na	2.3E+02	--	--	na	1.5E+01	--	--	na	2.3E+01	--	--	na	2.3E+01
1,3-Dichloropropene ^c	0	--	--	na	2.1E+02	--	--	na	3.2E+02	--	--	na	2.1E+01	--	--	na	3.2E+01	--	--	na	3.2E+01
Dieldrin ^c	0	2.4E-01	5.6E-02	na	5.4E-04	2.8E-01	6.5E-02	na	8.3E-04	6.0E-02	1.4E-02	na	5.4E-05	6.9E-02	1.6E-02	na	8.3E-05	6.9E-02	1.6E-02	na	8.3E-05
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	5.3E+04	--	--	na	4.4E+03	--	--	na	5.3E+03	--	--	na	5.3E+03
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	1.0E+03	--	--	na	8.5E+01	--	--	na	1.0E+02	--	--	na	1.0E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.3E+06	--	--	na	1.1E+05	--	--	na	1.3E+05	--	--	na	1.3E+05
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	5.4E+03	--	--	na	4.5E+02	--	--	na	5.4E+02	--	--	na	5.4E+02
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	6.3E+03	--	--	na	5.3E+02	--	--	na	6.3E+02	--	--	na	6.3E+02
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	3.4E+02	--	--	na	2.8E+01	--	--	na	3.4E+01	--	--	na	3.4E+01
2,4-Dinitrotoluene ^c	0	--	--	na	3.4E+01	--	--	na	5.2E+01	--	--	na	3.4E+00	--	--	na	5.2E+00	--	--	na	5.2E+00
Dioxin 2,3,7,8- tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	6.1E-08	--	--	na	5.1E-09	--	--	na	6.1E-09	--	--	na	6.1E-09
1,2-Diphenylhydrazine ^c	0	--	--	na	2.0E+00	--	--	na	3.1E+00	--	--	na	2.0E-01	--	--	na	3.1E-01	--	--	na	3.1E-01
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.5E-01	6.5E-02	na	1.1E+02	5.5E-02	1.4E-02	na	8.9E+00	6.3E-02	1.6E-02	na	1.1E+01	6.3E-02	1.6E-02	na	1.1E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.5E-01	6.5E-02	na	1.1E+02	5.5E-02	1.4E-02	na	8.9E+00	6.3E-02	1.6E-02	na	1.1E+01	6.3E-02	1.6E-02	na	1.1E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.5E-01	6.5E-02	--	--	5.5E-02	1.4E-02	--	--	6.3E-02	1.6E-02	--	--	6.3E-02	1.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	1.1E+02	--	--	na	8.9E+00	--	--	na	1.1E+01	--	--	na	1.1E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	9.8E-02	4.2E-02	na	7.2E-02	2.2E-02	9.0E-03	na	6.0E-03	2.5E-02	1.0E-02	na	7.2E-03	2.5E-02	1.0E-02	na	7.2E-03
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.6E-01	--	--	na	3.0E-02	--	--	na	3.6E-02	--	--	na	3.6E-02

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.5E+03	--	--	na	2.1E+02	--	--	na	2.5E+02	--	--	na	2.5E+02
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.7E+02	--	--	na	1.4E+01	--	--	na	1.7E+01	--	--	na	1.7E+01
Fluorene	0	--	--	na	5.3E+03	--	--	na	6.3E+03	--	--	na	5.3E+02	--	--	na	6.3E+02	--	--	na	6.3E+02
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.2E-02	na	--	--	2.5E-03	na	--	--	2.9E-03	na	--	--	2.9E-03	na	--
Heptachlor ^C	0	5.2E-01	3.8E-03	na	7.9E-04	6.0E-01	4.4E-03	na	1.2E-03	1.3E-01	9.5E-04	na	7.9E-05	1.5E-01	1.1E-03	na	1.2E-04	1.5E-01	1.1E-03	na	1.2E-04
Heptachlor Epoxide ^C	0	5.2E-01	3.8E-03	na	3.9E-04	6.0E-01	4.4E-03	na	6.0E-04	1.3E-01	9.5E-04	na	3.9E-05	1.5E-01	1.1E-03	na	6.0E-05	1.5E-01	1.1E-03	na	6.0E-05
Hexachlorobenzene ^C	0	--	--	na	2.9E-03	--	--	na	4.4E-03	--	--	na	2.9E-04	--	--	na	4.4E-04	--	--	na	4.4E-04
Hexachlorobutadiene ^C	0	--	--	na	1.8E+02	--	--	na	2.8E+02	--	--	na	1.8E+01	--	--	na	2.8E+01	--	--	na	2.8E+01
Hexachlorocyclohexane Alpha-BHC ^C	0	--	--	na	4.9E-02	--	--	na	7.5E-02	--	--	na	4.9E-03	--	--	na	7.5E-03	--	--	na	7.5E-03
Hexachlorocyclohexane Beta-BHC ^C	0	--	--	na	1.7E-01	--	--	na	2.6E-01	--	--	na	1.7E-02	--	--	na	2.6E-02	--	--	na	2.6E-02
Hexachlorocyclohexane Gamma-BHC ^C (Lindane)	0	9.5E-01	na	na	1.8E+00	1.1E+00	--	na	2.8E+00	2.4E-01	--	na	1.8E-01	2.7E-01	--	na	2.8E-01	2.7E-01	--	na	2.8E-01
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.3E+03	--	--	na	1.1E+02	--	--	na	1.3E+02	--	--	na	1.3E+02
Hexachloroethane ^C	0	--	--	na	3.3E+01	--	--	na	5.1E+01	--	--	na	3.3E+00	--	--	na	5.1E+00	--	--	na	5.1E+00
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.3E+00	na	--	--	5.0E-01	na	--	--	5.8E-01	na	--	--	5.8E-01	na	--
Indeno (1,2,3-cd) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	2.8E-01	--	--	na	1.8E-02	--	--	na	2.8E-02	--	--	na	2.8E-02
Iron	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Isophorone ^C	0	--	--	na	9.6E+03	--	--	na	1.5E+04	--	--	na	9.6E+02	--	--	na	1.5E+03	--	--	na	1.5E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Lead	0	1.2E+02	1.4E+01	na	--	1.4E+02	1.6E+01	na	--	3.0E+01	3.4E+00	na	--	3.4E+01	3.9E+00	na	--	3.4E+01	3.9E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.2E-01	na	--	--	2.5E-02	na	--	--	2.9E-02	na	--	--	2.9E-02	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.6E+00	8.9E-01	--	--	3.5E-01	1.9E-01	--	--	4.0E-01	2.2E-01	--	--	4.0E-01	2.2E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.8E+03	--	--	na	1.5E+02	--	--	na	1.8E+02	--	--	na	1.8E+02
Methylene Chloride ^C	0	--	--	na	5.9E+03	--	--	na	9.0E+03	--	--	na	5.9E+02	--	--	na	9.0E+02	--	--	na	9.0E+02
Methoxychlor	0	--	3.0E-02	na	--	--	3.5E-02	na	--	--	7.5E-03	na	--	--	8.7E-03	na	--	--	8.7E-03	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Nickel	0	1.8E+02	2.0E+01	na	4.6E+03	2.1E+02	2.4E+01	na	5.5E+03	4.6E+01	5.1E+00	na	4.6E+02	5.2E+01	5.9E+00	na	5.5E+02	5.2E+01	5.9E+00	na	5.5E+02
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	8.3E+02	--	--	na	6.9E+01	--	--	na	8.3E+01	--	--	na	8.3E+01
N-Nitrosodimethylamine ^C	0	--	--	na	3.0E+01	--	--	na	4.6E+01	--	--	na	3.0E+00	--	--	na	4.6E+00	--	--	na	4.6E+00
N-Nitrosodiphenylamine ^C	0	--	--	na	6.0E+01	--	--	na	9.2E+01	--	--	na	6.0E+00	--	--	na	9.2E+00	--	--	na	9.2E+00
N-Nitrosodi-n-propylamine ^C	0	--	--	na	5.1E+00	--	--	na	7.8E+00	--	--	na	5.1E-01	--	--	na	7.8E-01	--	--	na	7.8E-01
Nonylphenol	0	2.8E+01	5.6E+00	--	--	3.2E+01	7.7E+00	na	--	7.0E+00	1.7E+00	--	--	8.1E+00	1.9E+00	--	--	8.1E+00	1.9E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	7.5E-02	1.5E-02	na	--	1.6E-02	3.3E-03	na	--	1.9E-02	3.8E-03	na	--	1.9E-02	3.8E-03	na	--
PCB Total ^C	0	--	1.4E-02	na	6.4E-04	--	1.6E-02	na	9.8E-04	--	3.5E-03	na	6.4E-05	--	4.1E-03	na	9.8E-05	--	4.1E-03	na	9.8E-05
Pentachlorophenol ^C	0	1.5E+01	1.1E+01	na	3.0E+01	1.7E+01	1.3E+01	na	4.6E+01	3.7E+00	2.9E+00	na	3.0E+00	4.3E+00	3.3E+00	na	4.6E+00	4.3E+00	3.3E+00	na	4.6E+00
Phenol	0	--	--	na	8.6E+05	--	--	na	1.0E+06	--	--	na	8.6E+04	--	--	na	1.0E+05	--	--	na	1.0E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.8E+03	--	--	na	4.0E+02	--	--	na	4.8E+02	--	--	na	4.8E+02
Radionuclides Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.3E+01	5.8E+00	na	5.0E+03	5.0E+00	1.3E+00	na	4.2E+02	5.8E+00	1.5E+00	na	5.0E+02	5.8E+00	1.5E+00	na	5.0E+02
Silver	0	3.4E+00	--	na	--	4.0E+00	--	na	--	8.6E-01	--	na	--	9.9E-01	--	na	--	9.9E-01	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,1,2,2-Tetrachloroethane ^c	0	--	--	na	4.0E+01	--	--	na	6.1E+01	--	--	na	4.0E+00	--	--	na	6.1E+00	--	--	na	6.1E+00
Tetrachloroethylene ^c	0	--	--	na	3.3E+01	--	--	na	5.1E+01	--	--	na	3.3E+00	--	--	na	5.1E+00	--	--	na	5.1E+00
Thallium	0	--	--	na	4.7E-01	--	--	na	5.6E-01	--	--	na	4.7E-02	--	--	na	5.6E-02	--	--	na	5.6E-02
Toluene	0	--	--	na	6.0E+03	--	--	na	7.2E+03	--	--	na	6.0E+02	--	--	na	7.2E+02	--	--	na	7.2E+02
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Toxaphene ^c	0	7.3E-01	2.0E-04	na	2.8E-03	8.4E-01	2.3E-04	na	4.3E-03	1.8E-01	5.0E-05	na	2.8E-04	2.1E-01	5.8E-05	na	4.3E-04	2.1E-01	5.8E-05	na	4.3E-04
Tributyltin	0	4.6E-01	7.2E-02	na	--	5.3E-01	8.4E-02	na	--	1.2E-01	1.8E-02	na	--	1.3E-01	2.1E-02	na	--	1.3E-01	2.1E-02	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	8.4E+01	--	--	na	7.0E+00	--	--	na	8.4E+00	--	--	na	8.4E+00
1,1,2-Trichloroethane ^c	0	--	--	na	1.6E+02	--	--	na	2.5E+02	--	--	na	1.6E+01	--	--	na	2.5E+01	--	--	na	2.5E+01
Trichloroethylene ^c	0	--	--	na	3.0E+02	--	--	na	4.6E+02	--	--	na	3.0E+01	--	--	na	4.6E+01	--	--	na	4.6E+01
2,4,6-Trichlorophenol ^c	0	--	--	na	2.4E+01	--	--	na	3.7E+01	--	--	na	2.4E+00	--	--	na	3.7E+00	--	--	na	3.7E+00
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Vinyl Chloride ^c	0	--	--	na	2.4E+01	--	--	na	3.7E+01	--	--	na	2.4E+00	--	--	na	3.7E+00	--	--	na	3.7E+00
Zinc	0	1.2E+02	1.2E+02	na	2.6E+04	1.3E+02	1.4E+02	na	3.1E+04	2.9E+01	3.0E+01	na	2.6E+03	3.4E+01	3.4E+01	na	3.1E+03	3.4E+01	3.4E+01	na	3.1E+03

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	7.7E+01
Arsenic	2.6E+01
Barium	na
Cadmium	2.0E-01
Chromium III	1.3E+01
Chromium VI	1.8E+00
Copper	1.5E+00
Iron	na
Lead	2.4E+00
Manganese	na
Mercury	1.3E-01
Nickel	3.5E+00
Selenium	8.7E-01
Silver	4.0E-01
Zinc	1.3E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

2/7/2013 2:12:02 PM

Facility = Paint Bank Fish Hatchery

Chemical = ammonia

Chronic averaging period = 30

WLAa = 200

WLAc = 200

Q.L. = 0.2

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 9

Expected Value = .460561

Variance = .076362

C.V. = 0.6

97th percentile daily values = 1.12073

97th percentile 4 day average = .766278

97th percentile 30 day average = .555462

< Q.L. = 1

Model used = BPJ Assumptions, Type 1 data

No Limit is required for this material

The data are:

0.4

1.3

0.4

6

1.4

0.3

0.5

0

0.47

REGIONAL MODELING SYSTEM VERSION 4.0
Model Input File for the Discharge
to PAINT BANK BRANCH.

Segment Information for Segment 1

Definition Information

Segment Definition:	A discharge enters.
Discharge Name:	OUTFALL 003
VPDES Permit No.:	

Discharger Flow Information

Flow:	0.02 MGD
cBOD5:	4 mg/l
TKN:	1.02 mg/l
D.O.:	8.5 mg/l
Temperature:	13.8 Degrees C

Geographic Information

Segment Length:	0.05 miles
Upstream Drainage Area:	6.32 Sq.Mi.
Downstream Drainage Area:	6.33 Sq.Mi.
Upstream Elevation:	2080 Ft.
Downstream Elevation:	2060 Ft.

Hydraulic Information

Segment Width:	12 Ft.
Segment Depth:	0.088 Ft.
Segment Velocity:	0.73 Ft./Sec.
Segment Flow:	0.5 MGD
Incremental Flow:	0.001 MGD (Applied at end of segment.)

Channel Information

Cross Section:	Rectangular
Character:	Mostly Straight
Pool and Riffle:	Yes
Percent Pools:	50
Percent Riffles:	50
Pool Depth:	0.117 Ft.
Riffle Depth:	0.059 Ft.
Bottom Type:	Small Rock
Sludge:	None
Plants:	None
Algae:	None

Note: Segment 1 is no longer applicable due to consolidation of the discharges. The output for Segment 2 remains valid.

REGIONAL MODELING SYSTEM VERSION 4.0
Model Input File for the Discharge
to PAINT BANK BRANCH.

Segment Information for Segment 2

Definition Information

Segment Definition:	A discharge enters.
Discharge Name:	OUTFALL 001
VPDES Permit No.:	

Discharger Flow Information

Flow:	3 MGD
cBOD5:	4 mg/l
TKN:	1.02 mg/l
D.O.:	6.8 mg/l
Temperature:	13.8 Degrees C

Geographic Information

Segment Length:	0.4 miles
Upstream Drainage Area:	6.33 Sq.Mi.
Downstream Drainage Area:	6.34 Sq.Mi.
Upstream Elevation:	2060 Ft.
Downstream Elevation:	2000 Ft.

Hydraulic Information

Segment Width:	11.999 Ft.
Segment Depth:	0.376 Ft.
Segment Velocity:	1.139 Ft./Sec.
Segment Flow:	3.5 MGD
Incremental Flow:	0.001 MGD (Applied at end of segment.)

Channel Information

Cross Section:	Rectangular
Character:	Mostly Straight
Pool and Riffle:	Yes
Percent Pools:	50
Percent Riffles:	50
Pool Depth:	0.5 Ft.
Riffle Depth:	0.251 Ft.
Bottom Type:	Small Rock
Sludge:	None
Plants:	None
Algae:	None

modout

"Model Run For I:\hhwilliams\VPDES\Paint Bank\2008 Reissuance\Regional Model
Segmented4.mod On 12/17/2007 10:25:03 AM"

"Model is for PAINT BANK BRANCH."

"Model starts at the OUTFALL 003 discharge."

"Background Data"

"Flow", "CBOD5", "TKN", "DO", "Temp"
" (mgd)", " (mg/l)", " (mg/l)", " (mg/l)", " (deg C)"
.4804, 2, 0, 8.618, 13.8

"Discharge/Tributary Input Data for Segment 1"

"Flow", "CBOD5", "TKN", "DO", "Temp"
" (mgd)", " (mg/l)", " (mg/l)", " (mg/l)", " (deg C)"
.02, 4, 1.02, 8.5, 13.8

"Hydraulic Information for Segment 1"

"Length", "width", "Depth", "Velocity"
" (mi)", " (ft)", " (ft)", " (ft/sec)"
.05, 12, .088, .73

"Initial Mix Values for Segment 1"

"Flow", "DO", "CBOD", "nBOD", "DOSat", "Temp"
" (mgd)", " (mg/l)", " (mg/l)", " (mg/l)", " (mg/l)", " (deg C)"
.5004, 8.614, 5.2, 0, 9.58, 13.8

"Rate Constants for Segment 1. - (All units Per Day)"

"k1", "k1@T", "k2", "k2@T", "kn", "kn@T", "BD", "BD@T"
.8, .602, 20, 17.265, .35, .217, 0, 0

"Output for Segment 1"

"Segment starts at OUTFALL 003"

"Total", "Segm."
"Dist.", "Dist.", "DO", "CBOD", "nBOD"
" (mi)", " (mi)", " (mg/l)", " (mg/l)", " (mg/l)"
0, 0, 8.614, 5.2, 0
.05, .05, 8.622, 5.187, 0

"Discharge/Tributary Input Data for Segment 2"

"Flow", "CBOD5", "TKN", "DO", "Temp"
" (mgd)", " (mg/l)", " (mg/l)", " (mg/l)", " (deg C)"
3, 4, 1.02, 6.8, 13.8

"Incremental Flow Input Data for Segment 2"

"Flow", "CBOD5", "TKN", "DO", "Temp"
" (mgd)", " (mg/l)", " (mg/l)", " (mg/l)", " (deg C)"
.001, 2, 0, 8.635, 13.8

"Hydraulic Information for Segment 2"

"Length", "width", "Depth", "Velocity"
" (mi)", " (ft)", " (ft)", " (ft/sec)"
.4, 11.999, .376, 1.139

"Initial Mix Values for Segment 2"

"Flow", "DO", "CBOD", "nBOD", "DOSat", "Temp"
" (mgd)", " (mg/l)", " (mg/l)", " (mg/l)", " (mg/l)", " (deg C)"
3.5014, 7.061, 9.311, 0, 9.594, 13.8

"Rate Constants for Segment 2. - (All units Per Day)"

"k1", "k1@T", "k2", "k2@T", "kn", "kn@T", "BD", "BD@T"

1.3, .978, 20, 17.265, .55, modout .341, 0, 0

"Output for Segment 2"

"Segment starts at OUTFALL 001"

"Total", "Segm."

"Dist.", "Dist.", "DO", "CBOD", "nBOD"
"(mi)", "(mi)", "(mg/l)", "(mg/l)", "(mg/l)"

.05,	0,	7.061,	9.311,	0
.15,	.1,	7.239,	9.262,	0
.25,	.2,	7.401,	9.214,	0
.35,	.3,	7.549,	9.166,	0
.45,	.4,	7.684,	9.118,	0

"END OF FILE"

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge
to PAINT BANK BRANCH.

File Information

File Name: I:\hhwilliams\VPDES\Paint Bank\2008 Reissuance\Regional Model Segme
Date Modified: December 17, 2007

Water Quality Standards Information

Stream Name: PAINT BANK BRANCH
River Basin: James River Basin
Section: 12
Class: VI - Natural Trout Waters
Special Standards: None

Background Flow Information

Gauge Used: 02014000
Gauge Drainage Area: 153 Sq.Mi.
Gauge 7Q10 Flow: 11.63 MGD
Headwater Drainage Area: 6.32 Sq.Mi.
Headwater 7Q10 Flow: 0.4804026 MGD (Net; includes Withdrawals/Discharges)
Withdrawal/Discharges: 0.02 MGD
Incremental Flow in Segments: 7.601307E-02 MGD/Sq.Mi.

Background Water Quality

Background Temperature: 13.8 Degrees C
Background cBOD5: 2 mg/l
Background TKN: 0 mg/l
Background D.O.: 8.618449 mg/l

Model Segmentation

Number of Segments: 2
Model Start Elevation: 2080 ft above MSL
Model End Elevation: 2000 ft above MSL

REGIONAL MODELING SYSTEM VERSION 4.0
Model Input File for the Discharge
to PAINT BANK BRANCH.

File Information

File Name: I:\hhwilliams\VPDES\Paint Bank\2008 Reissuance\Regional Model Segme
Date Modified: December 17, 2007

Water Quality Standards Information

Stream Name: PAINT BANK BRANCH
River Basin: James River Basin
Section: 12
Class: VI - Natural Trout Waters
Special Standards: None

Background Flow Information

Gauge Used: 02014000
Gauge Drainage Area: 153 Sq.Mi.
Gauge 7Q10 Flow: 11.63 MGD
Headwater Drainage Area: 6.32 Sq.Mi.
Headwater 7Q10 Flow: 0.4804026 MGD (Net; includes Withdrawals/Discharges)
Withdrawal/Discharges: 0.02 MGD
Incremental Flow in Segments: 7.601307E-02 MGD/Sq.Mi.

Background Water Quality

Background Temperature: 13.8 Degrees C
Background cBOD5: 2 mg/l
Background TKN: 0 mg/l
Background D.O.: 8.618449 mg/l

Model Segmentation

Number of Segments: 2
Model Start Elevation: 2080 ft above MSL
Model End Elevation: 2000 ft above MSL

REGIONAL MODELING SYSTEM VERSION 4.0
Model Input File for the Discharge
to PAINT BANK BRANCH.

Segment Information for Segment 1

Definition Information

Segment Definition:	A discharge enters.
Discharge Name:	OUTFALL 003
VPDES Permit No.:	

Discharger Flow Information

Flow:	0.02 MGD
cBOD5:	4 mg/l
TKN:	1.02 mg/l
D.O.:	8.5 mg/l
Temperature:	13.8 Degrees C

Geographic Information

Segment Length:	0.05 miles
Upstream Drainage Area:	6.32 Sq.Mi.
Downstream Drainage Area:	6.33 Sq.Mi.
Upstream Elevation:	2080 Ft.
Downstream Elevation:	2060 Ft.

Hydraulic Information

Segment Width:	12 Ft.
Segment Depth:	0.088 Ft.
Segment Velocity:	0.73 Ft./Sec.
Segment Flow:	0.5 MGD
Incremental Flow:	0.001 MGD (Applied at end of segment.)

Channel Information

Cross Section:	Rectangular
Character:	Mostly Straight
Pool and Riffle:	Yes
Percent Pools:	50
Percent Riffles:	50
Pool Depth:	0.117 Ft.
Riffle Depth:	0.059 Ft.
Bottom Type:	Small Rock
Sludge:	None
Plants:	None
Algae:	None

REGIONAL MODELING SYSTEM VERSION 4.0
Model Input File for the Discharge
to PAINT BANK BRANCH.

Segment Information for Segment 2

Definition Information

Segment Definition: A discharge enters.
Discharge Name: OUTFALL 001
VPDES Permit No.:

Discharger Flow Information

Flow: 3 MGD
cBOD5: 4 mg/l
TKN: 1.02 mg/l
D.O.: 5.6 mg/l
Temperature: 13.8 Degrees C

Geographic Information

Segment Length: 0.4 miles
Upstream Drainage Area: 6.33 Sq.Mi.
Downstream Drainage Area: 6.34 Sq.Mi.
Upstream Elevation: 2060 Ft.
Downstream Elevation: 2000 Ft.

Hydraulic Information

Segment Width: 11.999 Ft.
Segment Depth: 0.376 Ft.
Segment Velocity: 1.139 Ft./Sec.
Segment Flow: 3.5 MGD
Incremental Flow: 0.001 MGD (Applied at end of segment.)

Channel Information

Cross Section: Rectangular
Character: Mostly Straight
Pool and Riffle: Yes
 Percent Pools: 50
 Percent Riffles: 50
 Pool Depth: 0.5 Ft.
 Riffle Depth: 0.251 Ft.
Bottom Type: Small Rock
Sludge: None
Plants: None
Algae: None

modout
"Model Run For I:\hhwilliams\VPDES\Paint Bank\2008 Reissuance\Regional Model
Segmented5.mod On 12/17/2007 10:30:38 AM"

"Model is for PAINT BANK BRANCH."
"Model starts at the OUTFALL 003 discharge."

"Background Data"
"Flow", "CBOD5", "TKN", "DO", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
.4804, 2, 0, 8.618, 13.8

"Discharge/Tributary Input Data for Segment 1"
"Flow", "CBOD5", "TKN", "DO", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
.02, 4, 1.02, 8.5, 13.8

"Hydraulic Information for Segment 1"
"Length", "width", "Depth", "velocity"
"(mi)", "(ft)", "(ft)", "(ft/sec)"
.05, 12, .088, .73

"Initial Mix values for Segment 1"
"Flow", "DO", "CBOD", "nBOD", "DOSat", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
.5004, 8.614, 5.2, 0, 9.58, 13.8

"Rate Constants for Segment 1. - (All units Per Day)"
"k1", "k1@T", "k2", "k2@T", "kn", "kn@T", "BD", "BD@T"
.8, .602, 20, 17.265, .35, .217, 0, 0

"Output for Segment 1"
"Segment starts at OUTFALL 003"
"Total", "Segm."
"Dist.", "Dist.", "DO", "CBOD", "nBOD"
"(mi)", "(mi)", "(mg/l)", "(mg/l)", "(mg/l)"
0, 0, 8.614, 5.2, 0
.05, .05, 8.622, 5.187, 0

"Discharge/Tributary Input Data for Segment 2"
"Flow", "CBOD5", "TKN", "DO", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
3, 4, 1.02, 5.6, 13.8

"Incremental Flow Input Data for Segment 2"
"Flow", "CBOD5", "TKN", "DO", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
.001, 2, 0, 8.635, 13.8

"Hydraulic Information for Segment 2"
"Length", "width", "Depth", "velocity"
"(mi)", "(ft)", "(ft)", "(ft/sec)"
.4, 11.999, .376, 1.139

"Initial Mix values for Segment 2"
"Flow", "DO", "CBOD", "nBOD", "DOSat", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
3.5014, 6.033, 9.311, 0, 9.594, 13.8

"Rate Constants for Segment 2. - (All units Per Day)"
"k1", "k1@T", "k2", "k2@T", "kn", "kn@T", "BD", "BD@T"
Page 1

1.3, .978, 20, 17.265, .55, modout
.341, 0, 0

"Output for Segment 2"

"Segment starts at OUTFALL 001"

"Total", "Segm."

"Dist.", "Dist.", "DO", "cBOD", "nBOD"
"(mi)", "(mi)", "(mg/l)", "(mg/l)", "(mg/l)"

.05,	0,	6.033,	9.311,	0
.15,	.1,	6.302,	9.262,	0
.25,	.2,	6.547,	9.214,	0
.35,	.3,	6.771,	9.166,	0
.45,	.4,	6.975,	9.118,	0

"END OF FILE"